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Performance Appraisal of US Hedge Funds

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PERFORMANCE ANALYSIS of US HEDGE FUNDS

ABSTRACT:

The aim of this dissertation is to investigate the strategies employed by successful hedge funds and analyse these funds' performance on the basis of those strategies. This research is done to throw light on the performance analysis of hedge funds strategies, the implementation of these strategies, their benefits and the risk involved in them. The returns of hedge funds over a period of 1994-2010 reported by the Hennessee Hedge Fund Index have been analysed using absolute performance measure like the Sharpe Ratio.

Objectives of this research:

i. Investigate the factors driving hedge funds returns/ performance.
ii. Implementation of most common hedge fund strategies and comparison of different hedge fund style (strategies) that generate returns for hedge funds.
iii. Comparison of risk - return characteristics of hedge funds with mutual funds.
iv. Investigate the unique challenges of the hedge fund market i.e. the risks involved in the use of hedge funds dynamic strategies.
v. Investigate evidence of superior risk – return performance of hedge funds as compared to different asset classes.

Structure of the research:

Section 1: Introduction - This part of the paper is focused on the hedge fund structure, its characteristics and the Nature of Regulation and the changes in the regulations brought about post the financial crisis of 2008.

Section 2: Literature Review - Investigates the elements that create profits for hedge funds. Past studies on the factors that drive the performance of hedge funds have been examined. It discusses the performance of hedge funds in the past and during the financial crisis of 2008. Comparison of hedge fund returns to that of mutual funds has been made.

Section 3: Research Methodology - Describes the data, methodology and statistics.

Section 4: Hedge Fund Strategies - Study of dynamic hedge fund strategies. The implementation of these strategies and the risk involved in them (leverage and short selling).

Section 5: Performance Analysis - The returns generated by different hedge funds by strategies within the index are compared and analysed. Comparison of successful vs. failed hedge funds strategies.

Section 6: Conclusion – Do hedge funds generate higher alphas. Evaluates the performance of hedge funds as compared to the different asset class benchmarks.

1. INTRODUCTION

A dramatic revolution has been witnessed in recent years towards alternative investment and hedge funds in particular. There is a growing interest in hedge funds from institutional investors, banks and traditional funds. Hedge fund was first started by Alfred Winslow Jones in 1949 with the aim to neutralize the effects of a bear market on a portfolio (Anson, M., 2006). Hedge funds can be described as, "private investment vehicles where the manager has a significant personal stake in the fund and enjoys high level of flexibility to employ a broad spectrum of strategies involving use of derivatives, short selling and leverage in order to enhance returns and better manage risk" (Agarwal, V. and Naik, N., 2005). Hedging is essentially used to eliminate the exposure to market fluctuations. It's a risk managing technique.

Hedge funds are privately managed investment funds and are open to private qualified investors and institutions only such as pension funds, university endowments, insurance companies, investment banks, prime brokers, etc. Their investment strategies are aimed to generate positive returns irrespective of the overall market situation. Compared to traditional funds that invest in equities and bonds only; hedge funds have the option to invest in derivatives and other complex products such as asset backed securities and mortgage backed securities. These funds require huge investments and are suitable to investors with high risk appetite only.

Hedge funds are a powerful source of diversification. They have the potential to generate above normal risk - adjusted returns. Their abnormal returns are termed as "ALPHA". Hedge funds pursue to provide high absolute returns and usually have features such as hurdle rates, incentive fees with high watermark provision which aligns the interests of managers and the investors (Amenc, N., Curtis, S. and Martellini, L., 2004).

1.1 Characteristics of Hedge Funds:

HF's should be included in a portfolio for a number of reasons such as flexibility in investing, high degree of diversification, leverage and short selling. While hedge funds offer a number of benefits there are a number of risks associated with them – investing in unconventional strategies, investment complexity, volatile assets, high degree of reliance on skill and talent of fund managers in making the investment decision, high management fees to managers, lack of transparency and loose regulation. The unique characteristics of hedge funds are detailed below:

1. **Structure**:

Hedge funds are US domiciled (onshore) or offshore funds. US-domiciled funds are structured as Limited Partnerships whereas offshore funds are structured as limited liability corporations in tax neutral jurisdictions and there are no limitations on the number of investors that can invest in the fund. Investors in offshore funds are non US or US tax exempt investors.

Most hedge funds are structured as open-end funds. Open end funds are such that shares can be issued and redeemed at any time. Shares can be redeemed by existing investors at the current net asset value. Closed end funds have a limited number of shares and new shares are not issued and cannot be redeemed. (Liang, B., 1998)

2. **Lack of Transparency and loose Regulations**:

Hedge funds lack transparency in investments. They are not required to be registered with the SEC as long as the fund conforms to SEC exemptions. Hedge fund managers are not required to publish performance information, asset allocations, or returns. They are not allowed to advertise to the public (Connor, G. and Woo, M.).

3. **Performance based fee structure**:

The performance based fee structure is designed to align the managers' interest with the funds' performance. Ackermann et al. (1999) state that hedge fund managers charge performance fees in proportion to the profitability of the fund's investments approximately 20% of profits and management fees are approximately 1 to 2%. Most hedge funds also include a management fee which is a percentage of the assets under management.

A "hurdle" (minimum rate of return) is expected to be achieved and any previous losses recouped before the performance fee is paid. This performance based fee structure motivates the manager to achieve maximum returns.

4. **Partnership**:

The fund manager is a general partner. The general partner makes a substantial personal investment in the fund. But the managers have a limited liability. This sort of partnership arrangement motivates them to achieve above normal returns as their own wealth is invested in the fund.

5. **Returns**:

Traditional funds aim to achieve returns higher than the market benchmark whereas hedge funds aim to achieve absolute risk adjusted returns. Hedge fund managers earn a great deal of their return from incentive fees, which are rewarded if the managers make a positive return only.

A "high watermark" feature in their contracts requires them to make up all previous losses before an incentive fee is paid. Hence the returns earned are termed as absolute returns (Liang, B., 1999).

6. **Low correlation**:

Hedge funds implement a wide category of strategies and instruments. These strategies are such that they have low correlation to capital market indexes. The performance of these funds does not depend on market direction but on stock selection skills.

7. **Liquidity**:

Hedge funds have a long lock - up period (investments cannot be liquidated during this period) of around a year. This is done to eliminate fluctuations in assets under management. The lock up period also helps apply trading strategy efficiently. Hedge funds do not allow for redemptions that frequently in a year and also charge a redemption fee. Traditional investments are more liquid than hedge funds.

8. **Management**:

There are several predominant techniques implemented by hedge fund managers that give them a competitive edge in the industry. The way the fund managers manage the fund through active participation and management adds value to their fund. They employ practices comprise of gathering enhanced information, exploration of opportunities, better trade and portfolio construction.

9. **High Investment**:

Minimum investment required to make by every investor in the fund is very high. US domiciled funds have limitation on the number of investors in a fund and having a high minimum investment enables the fund managers to implement their strategy well. 65% of investors have to be accredited i.e. they must have a net worth of at least $1 million and the minimum investment should be $250,000 million (Ackermann et al., 1999; Liang, 1999).

10. **Flexibility in instruments**:

Hedge funds can invest in all types of instruments and asset classes. Hedge funds invest in convertibles, warrants, derivatives (these are instruments that derive their value from an underlying security). Derivatives products help reduce risk, exploit inadequacies in pricing of derivatives, and increase exposure without having to expand the funds balance sheet.

11. **Flexibility in strategies**:

Hedge fund managers enjoy a lot of flexibility in terms of the strategies they implement. They can go long or short on securities, they can invest in any instrument that exists or they can focus on any sector, country, market and event. Hedge fund strategies are dynamic and they have low correlation to each other. Section 4 gives a detailed analysis of the hedge fund strategies.

1.2 Industry Size and Growth:

In the beginning of the year 2000, total industry (hedge funds) assets stood at US$277 billion and by 2006-07, the industry experienced a remarkable growth reaching US$1.95 trillion. (www.eurekahedge.com). By comparison, assets under management in the mutual fund industry grew from about $5.5 trillion in 1998 to about $10.4 trillion in 2006 (Williams, O., 2009).

Strong trends have been observed for hedge funds globally in the start of the year 2011, in spite of an atmosphere of growing uncertainty in the markets. The industry received record inflows in the first half of the year. The size of the industry is at US$1.81 trillion as of June 2011. But the year 2008 witnessed the growth trend reversed during the credit crisis, downfall of large financial institutions, high-profile frauds and the consequent financial crunch. Liquidity dry-ups, increased risk aversion and subsequent extensive redemptions resulted in the poorest annual performance for the industry and the Eurekahedge Hedge Fund Index lost 10.63% in 2008. Moreover, performance-based losses gave rise to additional negative asset flows which lead to greater losses as managers had to force sell possibly attractive positions. The industry reached its all-time low in April 2009, with Assets under Management (AUM) falling to US$1.29 trillion – a drawdown of 33% (www.eurekahedge.com). This year has witnessed high risk aversion. The managers provided downward protection to their portfolios from risk arising from the debt crisis in Europe still continuing and the debate about the debt ceiling in America which has become political concern. In these uncertain political conditions the Eureka hedge fund index gained 0.44% in July. The MSCI world index went down by 2.59% in this period as there was heavy risk aversion in high yielding assets. This shows that as the world markets declined the hedge fund managers were able to provide protection against this downturn considerably. As a matter of fact a positive inflow was recorded in this month as 25.04 billion dollars were allocated by

investors in the hedge fund industry against redemption of 20.70 billion. With a net inflow of 4.34 billion dollars this is the 8th consecutive month of positive net inflow recorded for the industry. This makes 2011 one of the strongest years on record in terms of capital allocation to hedge funds (www.eurekahedge.com).

1.3 Regulation:

It is imperative that regulators have access to all required information to monitor the activities of market participants like hedge funds that play an important role in the financial system, to protect investors, protect market integrity and manage systemic risk especially after the recent financial crisis that destabilised the global financial markets. Regulators have taken effective measures in this direction and they feel that the investors are well protected and market stability will be ensured as long as prudent risk management activities have been implemented at firm and industry level.

i. Protecting Investors: Regulators feel that there is no need for more intensive investor protection regulation regarding hedge funds as the investors in such funds are institutions or individuals with high net worth and can look out for themselves. However, hedge funds disclose all information regarding their asset holdings and activities through the offering memorandum to investors. They submit audited financial statements and are monitored for fraud and criminal activities on a regular basis.

ii. Ensuring market stability: Hedge funds in the US and UK are subject to regulations that monitor individual participants attempt to manipulate markets for instance – investors in US currency markets have to report large positions in pound sterling, Japanese yen, Canadian dollar, etc. through the Federal Reserve System. In some countries hedge funds report transactions in foreign currency to curb money laundering and to enforce capital control. Option Position Reporting Systems that track changes in large positions and detect large uncovered short positions have been set up by exchanges. Commodity Future Trading Commission requires daily -

reporting of all futures positions above certain level in the US and in many other countries in order to monitor position of clearing houses as well as individual positions.

iii. Managing Systemic Risk: Regulators have imposed a limit on irresponsible and hasty extensions of credit in order to avoid systemic risk to the financial system. Hedge funds are subject to regulatory policies concerning margin and collateral requirements. These regulations impact the business of hedge funds with financial intermediaries, brokers and banks. Daily position monitoring and calculation at market prices are carried out by brokers and banks with hedge funds as well as monitoring their investment strategies, returns and any withdrawals made in order to manage credit risk related with lending to hedge funds.

Regulations governing Hedge Fund Industry:

As of 2009, the Securities and Exchange Commission (SEC) and Commodities Futures Trading Commission (CFTC) oversee the activities of registered hedge funds and Commodity Trading Advisors (CTA.s) respectively. SEC along with federal bank regulators observes and controls the activities of hedge funds with the regulated bodies. Regulators have recommended that banks improve their risk management practices and mechanisms for managing their exposures to hedge fund activities. Under federal law, risk avoidance is to be complied by the regulated bodies, but there are no specific restrictions on hedge funds. The federal government have no restrictions over private investment in hedge funds. The regulations have been imposed to avoid any fraudulent practices and proper risk management by hedge funds. In order to manage credit risk arising from counterparty defaults the regulators assessed the activities of hedge fund across entities they regulated. The Presidents Working Group on Financial Markets established 2 committees to report systemic risk and investor protection (Williams, O., 2009).

1.3.1 Regulation in the US:

Just as publicly traded securities are subject to various regulations regarding trading, reporting and record keeping, hedge funds within the US are subject to these requirements too (Williams, O., 2009).The Dodd-Frank Act made registration mandatory for all hedge fund advisors with more than US$150 million in assets under management. Before that, the anti- fraud provisions of the Investment Advisers Act of 1940 governed the hedge funds. Hedge funds have been exempt from mandatory registration with the SEC and the Investment company act of 1940, which is for regulating investments funds sold to retail investors. This was because of the regulatory restrictions on ownership, as hedge funds are privately-owned pools of investment capital with regulatory limits on the number and type of investor that each fund may have (Coggan, P., 2011).

(University of Cincinnati) Hedge funds relied primarily on the two primary exemptions in the Investment Company Act of 1940 that prohibit hedge funds from selling their securities through public offerings:

(a) Section 3(c) 1 which restricts funds to 100 or fewer investors and

(b) Section 3(c) 7, which requires all investors to meet a "qualified purchaser" criterion.

A registration statement is required to be filed with the SEC, by companies who want to sell their securities publicly, under the Securities act of 1933, or they must comply with private placement rules under the Act. A fund can have an unlimited number of investors under Section 3(c) 7, but if a fund has any class of equity securities owned by more than 499 investors, it must register its securities with the SEC under the Securities Exchange Act of 1934 (U.S Securities and Exchange Commission, 2011).

Qualified clients: The Investment Advisers Act of 1940 Rule 205–3 defines a Qualified Client as; an individual who has at least $750,000 in assets invested with the adviser or a net worth in excess of $1.5 million. Or he may be one of certain high-level employees of the investment adviser. For SEC registered hedge fund advisers to charge an incentive or performance fee, the investors in the funds must be "qualified clients". Under the Dodd-Frank Act, the SEC is required to periodically adjust the qualified client standard for inflation (University of Cincinnati).

Hedge funds and their managers are governed by the anti-fraud provisions of the Act even though the securities are not registered under the Act of 1933. Hedge funds raise funds through private placement and offer their securities solely to accredited investors. An individual person with a minimum net worth of $1,000,000 or a minimum income of $200,000 in each of the last two years and a reasonable expectation of reaching the same income level in the current year is

said to be an accredited investor. The minimum net worth for banks and corporate entities is $5,000,000 in invested assets (University of Cincinnati).

The Dodd-Frank Act:

The Dodd-Frank Wall Street Reform Act was passed in the U.S. in July 2010, aiming to increase regulation of financial companies, including hedge funds. The Dodd-Frank Wall Street Reform Act requires that hedge funds with at least $1.5 million assets under management to register with the SEC as of July 21, 2011. (Chalmers, G., 2010). Before the introduction of the Dodd-Frank Act, the registration of hedge funds with the SEC was on voluntary basis and these funds were subject to the same practices as other registered institutions. Practices like keeping books and records as per the compliance laws and having it inspected by SEC (Williams, O., 2009). Hedge funds were not subject to all of the reporting requirements of the Securities Exchange Act of 1934 because they did not have publicly traded securities. Managers having $1 million worth of assets under management however have to report on quarterly basis their ownership of listed equity securities. This disclosure is necessary when managers own more than 5% of any class of these listed securities (U.S Securities and Exchange Commission, (2011) and (Chay, F., 2010).

The number of hedge funds under the SEC supervision will increase dramatically with the implementation of these regulations. Netty, I. (2011) cites that by end of July 2011, offshore funds with more than 15 U.S. clients and investors, and managing more than $25 million, will also have to register with the SEC. It is mandatory under this act for hedge funds to disclose their positions to aid regulators complete their duty to monitor and control systemic risk. The purpose of such data is to use to protect investors and market stability. The "Volcker Rule" imposes limitations on banks and other affiliated institutions on their involvement with hedge funds and related activities.

1.3.2 Regulation in Europe:

It is compulsory for hedge fund managers to be regulated and authorised by the national regulator i. e. the Financial Services Authority (FSA) in the UK (Drawbaugh, K., 2011). In the past, there existed different regulatory methods within different countries of the European Union. In certain countries like Portugal and France, there are restrictions on the use of derivatives and leverage respectively (Coggan, P., 2011).

There was a law passed in the EU that required all hedge fund managers in this region to register with national regulatory authorities in 2010. Alternative Investment Fund Managers Directive was passed in the year 2010 by the EU with the objective to provide superior monitoring and control of alternative investment funds. Under this directive, managers are obligated to release further information to the authorities about their strategies for investing on a regular basis. It also subjects hedge fund managers to maintain higher volumes of capital and limitations on the use of leverage. AIFMD is imposed across the whole of EU. The AIFMD is wide-ranging and includes managers situated both inside the EU as well as those advertising their funds from outside the EU (Chay, F., 2010).

In September 2008, SEC ended the Consolidated Supervised Entities program, created in 2004 as a way for global investment bank conglomerates that lack a supervisor under law to voluntarily submit to regulation. The agency plans for enhancing SEC oversight of the broker-dealer subsidiaries of bank holding companies regulated by the Federal Reserve, based on a Memorandum of Understanding between the two agencies. Post the 2008 credit crisis the regulations passed in the United States and Europe were proposed to increase government oversight of hedge funds and remove any regulatory gaps. As of 2008, short selling has been banned because the United Kingdom government considers it to be the reason behind the fall and

bankruptcy of the company Lehman Brothers (Koh et al, 2002; Kat and Miffre, and Williams, O., 2009).

1.3.3. Impact of new regulations on the Industry:

As regulators increase oversight of the industry, the number of new hedge funds worldwide declined to about 150 in the fourth quarter, from almost 250 from previous year. Hedge-fund start-ups are slowing as institutional investors favour larger managers. In Europe, managers put on hold their plans to set up hedge funds last year as the European Union took months to agree on new regulations for alternative investment managers (Netty, I., 2011).

European lawmakers in November approved regulations requiring hedge funds to set limits on their use of leverage and avoid pay practices that encourage risk taking. New regulations introduced in the U.S. and the EU as of 2010 requires hedge fund managers to report more information, leading to greater transparency (Chay, F., 2010).

In addition, investors, particularly institutional investors, are encouraging further developments in hedge fund risk management, both through internal practices and external regulatory requirements (Jones, S., 2011). The increasing influence of institutional investors has led to greater transparency: hedge funds increasingly provide information to investors including valuation methodology, positions and leverage exposure (White, J., 2010).

2. LITERATURE REVIEW

This section focuses on previous studies on the factors driving the hedge funds' performance. The first section investigates the elements that generate returns/alpha for hedge funds. Views of fund managers on the performance attribution of hedge funds and major trends that create investment profits have been analysed. Performance figures of hedge funds in the past and during the financial crisis of 2008 have been reported. Also, comparison between hedge funds returns and mutual funds returns has been studied.

2.1 What are the elements that create profits for hedge funds?

Flexibility: Hedge funds have the flexibility not to buy and sell in the same direction as the market. When a market is down hedge funds are not obligated to liquidate positions or to pay off withdrawals by investors as is the case with traditional funds. Hedge funds can wait for a market reversal if they have credit lines to draw on in order to increase the margin or collateral. This is possible because investor funds are locked in for a substantial period. This makes it possible for hedge funds to make profits even if the market is down or if they hold positions not in the direction of market movements. Market neutral strategies employed by hedge funds generate huge profits in such conditions. Short sales of overvalued securities lead to profits (Eichengreen B., Mathieson D., 1999).

Not bound by prospectus: There are no restrictions on hedge funds to invest new capital in the same assets or using same strategy as existing capital. The have a lot of options and the freedom to invest in any instrument that exists. They have the freedom to quickly move between markets.

Active Management: Client expectations of above normal returns motivates fund managers to look for superior opportunities to invest and strategies that are different from their counterparts as everyone buying the same assets at the same time brings the value of the assets down. These

assets prices will already reflect others move. Thus active management of fund managers helps generate profits. Also the lock in period helps managers implement strategies effectively.

Use of leverage: Hedge funds buy securities on margin by leveraging the capital they invest in. They buy structured derivative products without any up front capital by only paying a premium when the securities value goes up or down. They also engage in collateralised borrowing. They obtain secured as well as unsecured credit lines from banks which are used to finance additional margin calls when the market moves against them. The use of leverage helps amplify returns to a particular strategy (Eichengreen B., Park, B., 2001). Convertible arbitrage and merger arbitrage benefit from the use of leverage. Liang, B. (1999) on comparing average monthly return of levered funds with unlevered funds found that levered funds outperformed unlevered funds and as of June 1997, 83% of funds used leverage.

Use of Derivative products: CTA.s and hedge funds derive much of their return from derivatives. Schneeweis, T. and Spurgin, R. (1997) and (1998) studied the historical performance of CTA.s and hedge funds and state that these assets have offered positive risk adjusted returns.

Less strictly regulated: Hedge funds have more freedom in terms of borrowing limits and wider options for investing unlike traditional funds. They are not required to be registered with the SEC or disclose their asset holdings. Hedge funds are not required to offer daily liquidity. This allows them to take illiquid positions that are difficult to mark to market but have the potential to offer positive risk adjusted returns. (Schneeweis, T., Spurgin, R.)

Fung and Hsieh, 1996 state that there are three sources of returns made by the hedge funds:

i. Differences in trading strategies

ii. Differences in the asset markets traded

iii. Differences in time periods i.e. rallies or declines in the markets

Style Effects: Brown, Goetzmann and Ibbotson (1999) attribute the performance of offshore hedge funds to the style effects rather than manager skills. Liang, B. (1999) and Brown, S. and Goetzmann, W. (2001) find that variances in investment style contribute about 20 per cent of the cross sectional variability in hedge fund performance. Differences in style explain the differences in risk taking by fund managers.

An investor who is unconstrained and unbiased has an opportunity to earn excess returns by taking the opposite trade. Hedge funds are often quicker to respond to structural innovation or ground-breaking opportunities in niche markets. 2 sources of risk adjusted returns or alpha have been delineated (Dunn, T., 2007):

a. Tactical alpha – Tactical alphas source are specific to each manager and are distinctive in nature. It takes into consideration factors other than the skill of the manager that drives the funds' performance. Those factors are:

- Information advantages: Distressed debt managers may have asymmetric information due to their experience.
- Filtering advantages: the manager of equity long/short may have access to the same information as others but he may draw distinctive interpretations and conclusions than them or a manager of a global macro fund might have superior improvised market judgments.
- Analytic advantages: statistical arbitrage managers apply complex algorithms to price patterns and have superior analytical skills.
- Craftsmanship advantages: managers of multi-strategy funds add value through proper weighting of the underlying strategies by hedging the undesirable risks.

- Integration advantages: capital structure arbitrage manager exploits the traditional separation of equity and debt analysis.
- Business advantages: a superior manager has the knack to maintain a suitable asset/liability structure, stable financing and the capability to stay in the trade despite extreme bouts of volatility.

b. Structural alpha – Hedge funds often benefit from environmental constraints or motivational biases that handicap other market participants. A rating downgrade to lower than investment-grade may precipitate a wave of forced selling by those with bond rating constraints. Environmental constraints include yield restrictions, shorting restrictions, capital requirements and loss restrictions. Behavioural biases include loss aversion, home bias, silo thinking (e.g., equity and bond analysis is rarely integrated), risk myopia (risk not evaluated in a portfolio context) and liquidity bias (even if liquidity is less important for a long-term investor) (Dunn, T., 2007).

Liang, B. (1999) states that the average hedge fund returns are related positively to incentive fees, the size of the fund and the lockup period. Hedge Funds have higher Sharpe ratios, lower market risks (betas) and higher abnormal returns (alphas) as compared to traditional funds such as mutual funds. Their dynamic trading strategies and low systematic risk makes them efficient investment vehicles. They also found that funds with high watermark perform better than funds with low watermark. (Under high watermark provision the manager is expected to make up all the losses before any incentive fee is made to him i.e. cumulative return should be higher than the hurdle rate.) A hurdle rate is to collect incentive fees and a watermark is to recover past losses. Manager's interests are aligned to funds' performance. Managers of different funds have different investment mandates. Traditional fund managers have a relative return target (Mutual

fund managers are rewarded depending on the amount of assets under management. Mutual fund invest in the top-rated funds, rated in accordance with the relevant benchmarks, these managers aim to outperform only their benchmarks) while hedge fund managers have absolute return targets (Sharpe, 1992).

Manager's selection skills and insight are factors that contribute towards the funds' performance. The stylistic differences of managers arising due to the differences in the assets held by them in their portfolios are the determinants of funds' performance. In Sharpe's (1992) model, the "location" component of return, which tells us the asset categories the manager invests in, was considered as a determinant of returns arising due to the manager skills. Fung and Hsieh, (1997) state that managers' returns can be characterized more generally by three key determinants: the returns from assets in the managers' portfolios, their trading strategies, and their use of leverage. Hedge funds have non collinear returns with market indexes. They have low or negative correlations with the market indexes. This makes them an attractive diversification tool for investments (Lo, W. A., 2001).

2.2 Evidence of superior performance of Hedge Funds:

Amin, G. and Kat, H. (2003) investigated 77 hedge funds and 13 hedge fund indices for the period 1990-2000 and report that they provide excellent pay off profile when combined with S&P500 in a portfolio.

Agarwal, V. and Naik, N.Y. (2000), state that the persistence in hedge funds' performance is evident. Brown et al. (1999), Brown, Otsuki, et al. (2001), Brown, Park et al. (2001) and Liang (1999) state that hedge funds have attrition rate much higher than mutual funds. Brown et al. (1999) find that offshore hedge funds exhibit positive risk adjusted returns and this performance

comes from the style effect of managers according to them. They conclude that there is barely any proof of differential manager skills present.

Brown, Goetzmann, Hiraki, Otsuki and Shiraishi (2001) and Brown, Goetzmann and Park (2001) emphasize that the volatility of the portfolio comprising of investments in hedge funds which have performed well in the first half of the year decreases the volatility of that portfolio in the second half of the year. Liang (1999), Agarwal and Naik (2000), Fung and Hsieh (1997) and Schneeweis and Spurgin (1997) show that the inclusion of hedge funds in a portfolio improves its risk-return profile, due to their low correlation with other financial securities and the markets.

The performance analysis carried out by Capocci, D. and Hubner, G. (2004), indicates that one fourth of individual hedge funds provide substantial positive excess returns. They evaluated every strategy individually and found that 10 out of 13 strategies offer significantly positive excess return.

It is observed that the set of feasible portfolios is extended considerably when hedge funds are added. The portfolio return rises by as much as 200 basis points. The average hedge funds over the period of their study January 1991 to September 1998 seem to have lower risk and higher returns compared to other benchmarks in the study except S&P. Even though the returns were not highly correlated to the S&P there was a very small difference in their returns. Hedge Funds deliver higher returns than all other benchmarks including the bond benchmarks even though risk remains lower than all other benchmarks except the bond benchmark (www.tradingmaterial.com/ebook).

Ding, B. and Shawky, H. (2007) find that during 1990–2003, on comparing various hedge fund categories against a market index, hedge funds realized above normal performance. They report strong performance by Event Driven strategies, Distressed Securities and Merger Arbitrage

strategies whereas weak performance by Emerging Markets, Equity Hedge and Global Macro strategies during that period.

It has been reported that the average hedge fund generated 11.4% returns yearly which constitutes about 6.7% return above the overall market before deducting fees. This was based on the analysis of 8400 hedge funds (Mallaby, S. 2010). Another is that between January 2000 and December 2009 the hedge funds outperformed other investments were significantly less volatile, with stocks falling -2.62% per year over the decade and hedge funds rising +6.54% (Hennessee Group LLC. 2010).

Hedge funds returns for the period 1990-1998 have been evaluated using six-factor Jensen alphas for individual hedge funds comprising of eight different investment styles. They found that about 25% of the hedge funds generate positive excess returns. The rate and extent of the funds' excess earnings vary significantly with investment style. They also test for persistence in hedge fund performance over 1-year and 2-year horizons (using six-factor alphas as a measure of performance) and report significant persistence (Edwards, F. R. and Caglayan, M. O., 2001).

2.3 Hedge funds' performance during crisis:

Shadow banking/institutions do not take funds from clients like a depository bank. Examples of shadow banking institutions comprise of Bear Stearns and Lehman Brothers, hedge funds, SIVs, investment banks, and other non-bank financial institutions. Hedge funds have been held responsible by some for destabilising the financial markets. As hedge funds are not open to retail investors the fund is not governed by the same restrictions and policies that other investment funds are subject to. Hedge funds are subject to minimum trading restrictions. During the financial crisis of 2007-2008, hedge funds have received a great deal of negative publicity due to its style of investing – leverage and short selling.

Financial turmoil has a considerable impact on the performance of hedge funds. Most hedge fund strategies ran into losses in the 2008 crisis. Industry survey showed these funds were in double digit losses between June and November approximating $70 billion in redemptions.

Allegedly some funds of hedge funds were thoroughly investigated for fraud as hedge funds have been held responsible for intense volatility in stock and commodity markets in 2008. However, a survey by institutional investors has revealed that these investors still remain committed to investing in hedge funds in the long term (Williams, O., 2009).

2.4 Hedge funds vs. Mutual funds return:

Ackermann et al. (1999) and Liang (1999) compared the performance of hedge funds and mutual funds as well as their performance against numerous indices. They observed that hedge funds achieve better performance than mutual funds persistently. But they underperformed the market indices against which they were compared. They also specify that hedge fund returns are more volatile than both mutual fund returns and the market indices. They conclude that hedge fund strategies are different from mutual fund strategies and these strategies are non-traditional and dynamic.

Ackermann and Ravenscraft (1998) underline that the stricter legal restrictions for mutual funds as compared to hedge funds hamper their performance. The state that the unique characteristic of hedge funds enables them to achieve higher returns.

Lehmann and Modest (1987), Ippolito (1989), and Grinblatt and Titman (1989, 1992) are studies that show evidence of higher returns of hedge funds while Jensen (1969), Malkiel (1995), Gruber (1996), and Carhart (1997) are research work getting the contrasting inference.

Ackermann, McEnally, Ravenscraft (1999) also report that hedge funds outperform mutual funds. Leger (1997) conducted an investigation of 72 UK investment trusts using the CAPM

(Capital Asset Pricing Model) for the period of 1974-1993 and discovered insignificant indication of ex-post performance.

Quigley and Sinquefield (2000) conducted an investigation on the performance of 752 mutual funds investing in equity markets only in the UK and found no significant results. Fletcher (1997) used APT (Arbitrage Pricing Theory) to measure the performance of mutual funds over the period 1980-1989 and found no statistical significance of abnormal performance.

Maximum studies of mutual fund performance lack proof of positive excess returns as reported by Brown & Goetzmann, 1995; Elton, Gruber, & Blake, 1996; Elton, Gruber, Das, & Hlavka, 1993; Goetzmann & Ibbotson, 1994; Hendricks, Patel, & Zeckhauser, 1993; Sharpe, 1966; Treynor, 1965).

All the literature on the performance of hedge funds indicates that hedge funds are an impeccable investment tool with higher risk adjusted returns and its inclusion in the portfolio reduces the volatility of that portfolio.

3. RESEARCH METHODOLOGY

3.1 Data Collection:

All the data on hedge funds for the purpose of evaluating hedge funds' performance has been collected from Hennessee Hedge Fund Indices.

Hennessee Hedge Fund Indices: The Hennessee Hedge Fund Indices are calculated by collecting data on hedge funds' performance submitted to the Hennessee Hedge Fund Advisory Group by a varied set of hedge funds. The Hennessee Hedge Fund Index is an equally-weighted average of the funds in the Hennessee Hedge Fund Indices is designed to provide unbiased market proxy of the hedge fund universe. The funds in the Hennessee Hedge Fund Index represent the bigger Hennessee Universe which presently comprises of over 3,500 hedge funds. The funds returns and are net of fees and unaudited. 23 hedge fund styles have been included in the equally weighted average Index. (www.hennesseegroup.com)

3.2 Data Methodology:

The annualised data of the Hennessee Hedge Fund Index returns, the Hedge funds by Strategy Index returns and the Asset Class Benchmarks returns along with the standard deviations of these returns have been collected and analysed using descriptive statistical methods. The descriptive risk-return characteristics are included in the statistical tests. The hedge fund returns are compared to the returns of the different asset class benchmarks. Sharpe Ratios are calculated to measure the performance of hedge funds.

i. The focus is to discover if the hedge funds generate excess returns than the market proxy (asset class benchmarks) and

ii. To evaluate which strategy gives the best performance within the index.

3.3 Hedge Fund Performance Measurement:

3.3.1 How to Measure the Performance of Hedge Funds?

Absolute risk - adjusted performance measure (such as Sharpe Ratios) can be used to analyse the performance of hedge funds. These measures do not consider a benchmark in their calculation and hence are called absolute risk - adjusted measures. (Cappuci, D., and Hubner, G., 2004).

Alternative method is to reference the fund to an index and carrying out Performance Attribution. Performance attribution analysis can be carried out in the following steps:

1. Identify a reference index.
2. Comparing the performance (annualised returns) of the fund to that of the referenced index.
3. Using Style based analysis, holding based analysis, multiple factor analysis.
4. Aim is to determine whether the fund outperforms the index.
5. Assessing the contributing factors of this excess return.

This type of method leads to measurement bias. There are a lot of biases in creating hedge fund indexes and it is difficult to measure the performance of hedge funds against a reference index. Hence, for the purpose of this research absolute risk adjusted measures such as Sharpe Ratios are used to evaluate the performance.

3.3.2 Which performance measurement models are used?

Different models have been used in performance evaluation of hedge funds. Fung and Hsieh (1997) use an extension of Sharpe.s (1992) single asset class factor model. Schneeweis and Spurgin (1998) use a multi-factor model based approach. Brown et al. (1999) and Ackermann et al. (1999) use a single-factor model which emphasises only on total risk.

Liang, B., (1999) extends Fung, W. and Hsieh, D., (1997) model, by running regressions based on fund characteristics and classical measure like the Sharpe ratio. Agarwal, V. and Naik, N.Y., (2002) recommend a common asset class factor model comprising of excess returns on passive option-based strategies and on buy-and-hold strategies to benchmark the performance of hedge funds. Agarwal, V., (2001) uses a model consisting of trading strategy factors and location factors to explain the variation in hedge funds returns over time.

Agarwal, V., and Naik, N.Y., (2000) implemented parametric and non - parametric methods for measuring hedge funds' performance in their studies. Their parametric method regresses lagged alphas. While in the non-parametric method a likelihood table of winners and losers depending on the alpha is constructed.

There is no one universally accepted model. Previous studies suggest that it is better to use numerous specifications to compare the results attained. In this study parametric methods are used for the purpose of analysis. Winners and losers are determined on the basis of rankings based on Sharpe Ratios.

3.3.3. How to measure the performance of hedge fund manager?

While analysing performance using quantitative data attribution reports should also consider the source of profit and loss from managers' skills. Managers are said to have performed well if they

generate alphas greater than the market benchmark. Alphas generated are the truest measure of a mangers performance.

The first step in assessing a manager's performance is to investigate the manager's investment style, his/her aim (value, restrictive, growth) and the asset classes or instruments the manager employ, the degree of leverage employed. It is important to assess the manager on all these matters. Analysis of unusual beta facilitates a more precise assessment of manager skill. Finally, the degree of absolute volatility and relation to an appropriate benchmark, and the source of volatility, is vital to determine the source of managers. Returns and risks, situation is important to assess the managers' performance.

A particular hedge fund by strategy can be compared with another hedge fund following a similar style to investigate how the fund has performed with respect to the peers employing same strategies. In order to find out if the hedge fund manager following a particular strategy is beating the market or underperforming it, it can be compared with indexes such as Dow Jones Credit Suisse and Hennessee Index.

3.4 Risk-free return and market proxy (benchmarks):

It is a challenge to choose a market performance index. Agarwal (2001) found that a major challenge in a risk-adjusted analysis of hedge funds is the identification of a meaningful benchmark. In order to overcome this barrier, Fung and Hsieh (1997), Schneeweis and Spurgin (1998), and Liang (1999) used style analysis based on multi-factor approach; Brown et al. (1999) used a Generalized Stylistic Classification (GSC) algorithm and grouping the managers on the basis of their realized returns. The Russel 3000 was used in Agarwal and Naik (2002) and Agarwal (2001). Capocci, D. and Hubner, G., (2004) use the value-weighted portfolio of all

NYSE, Amex and Nasdaq stocks as the market proxy, and they used 1-month T-bill from Ibbotson Associates as the risk free rate.

The benchmarks and the risk free rate used are: S&P 500, Barclays Aggregate Bond Index, MSCI the World Index Price and NASDAQ. The T bill rate is used as the risk free rate for calculating Sharpe Ratios.

3.5 Performance Measure:

Hedge funds' performance is measured by comparing their returns to an estimate of their risk. Common measures are the Sharpe ratio, Treynor measure and Jensen's alpha (Longo, 2009), (Tran, 2006). The Sharpe ratio has been frequently used as a performance measure in the hedge fund analysis. The Sharpe ratio is useful to measure the performance of portfolios total risk as well as the risk of an element in the portfolio. Studies show that, comparison of the Sharpe ratio to the other performance measures results in essentially similar rank ordering across hedge funds (Ackermann et al., 1999; Liang, 1999; Schneeweis et al., 2002; Dowd 2000).

Eling, M. and Schuhmacher, F., (2007) studied return data of 2763 hedge funds using Sharpe Ratio and 12 other measures of performance and found that the different performance measures gave same results as Sharpe Ratios across the hedge funds.

Sharpe Ratio:

The Sharpe ratio is used to depict to what extent the return of an asset compensates the investor for the risk assumed, the greater the Sharpe ratio the better. When comparing two assets each with the expected return against the same benchmark with risk free rate of return, the asset with the higher Sharpe ratio gives extra return for the equal risk assumed. It is described as the ratio of excess returns and standard deviation (Sharpe, 1992).

It is defined as:

$$S = \frac{E[R - R_f]}{\sigma} = \frac{E[R - R_f]}{\sqrt{\text{var}[R - R_f]}},$$

Where R is the asset return,

R_f is the risk free rate of return,

E[R - R_f] is the expected excess asset return over the benchmark return,

σ is the standard deviation of the excess asset return.

While **Treynor Ratio** is given as:

$$\mathbf{T} = \frac{\mathbf{E[Rp - Rf]}}{\boldsymbol{\beta p}}$$

Where E (Rp) is the expected return of the portfolio,

R_f is the risk-free rate,

β_p is the beta of the portfolio.

While **Jensen's (α)** is given by:

$R_{pt} - R_{ft} = \alpha + \beta (R_{mt} - R_{ft}) + \varepsilon_{pt}$

Where R_{pt} is the return of the portfolio,

R_{ft} is the risk-free rate,

B_p is the beta of the portfolio,

R_{mt} is the market return.

The Sharpe ratios benefit is that it is calculable directly from any given sequence of returns without requiring any extra data concerning the source of return. While Jensen.s alpha is a relative risk measure and is calculated using a benchmark. The Treynor ratio concerns only systemic risk of a portfolio, the Sharpe ratio concern both systemic and individual risks. In this

study Sharpe Ratio has been used for performance measurement. Sharpe ratios for all hedge fund indexes different strategies have been studied. **Strategies with higher Sharpe ratios are considered best performers.**

3.6 Biases in hedge funds data:

According to Ackermann et al. (1999) and to Fung and Hsieh (2000), two biases occur in the particular case of hedge funds: selection bias and instant history bias. Hedge funds are not permitted to publicise or market their funds; they reflect addition in a database chiefly as a marketing tool. The self-selection bias exists as funds that perform well have less motivation to report their performance to a database as this might be considered a move to attract new investors, and this might bring them under the scrutiny of SEC for illegal marketing. The second bias called instant history bias or backfilled bias arises as a fund's performance history is backfilled before they are added to the database. This may cause bias because funds with a bad track record are not likely to be interested to be included in the database while funds with good performance history would be interested in being included in the database. Survivorship bias has received a great deal of consideration in the hedge fund literature. Survivorship bias may take place when the database comprises of only surviving funds information. Two broadly used definitions of this bias are: the performance difference between living funds and dead funds (Ackermann et al., 1999), and the performance difference between active funds and all funds (Liang, 2000). Data provider's backfill funds' performance history when a new fund is included in the database. This allows them to provide data that is older than the beginning date of the database itself. These providers do not exclude obsolete funds and should generally not suffer from survivorship bias for the years post the beginning of the databases (Capocci, D., Hubner, G., 2004).

To overcome some of these biases, Hennessee Hedge fund Index is selected. The procedure employed to construct the Hennessee Hedge Fund Index helps eliminate such biases. It is to first define the universe it is assessing. The index universe is defined as:

- Funds having at least $10 million (AUM),
- Funds should have a good track record of at least one-year and
- Financial statements should be audited regularly.
- Report net performance figures on a monthly basis (as pre-determined) and in a timely manner;
- Be willing to communicate their investment style to Hennessee Group for accurate inclusion in the appropriate sub-index.

Each style index is calculated by taking an equally weighted average of the underlying hedge funds for that style. The overall Hennessee Hedge Fund Index is calculated by taking an equally weighted average of all the underlying funds in each individual style.

The procedure investigates the proportion of assets invested in every subcategory and picks funds for the index established on those percentages, so that the profile of the index corresponds to the profile of the universe. Caps on sector weights are imposed to improve diversification and minimize deliberation of risk. The index is designed and rebalanced every month. Funds are re picked on a periodical basis as it fits needed. The Index adopts a rules-based construction method, classifies its components (funds), and reduces bias in the index components selection process as a result of the rules-based method. It aims to attain maximum representation of the index universe. To eliminate survivorship bias, funds are included in the index till the time they are completely liquidated or they are unable to meet the financial reporting requirements.

4. HEDGE FUND STRATEGIES

Fung and Hsieh (1997) categorize a hedge funds strategy according to both "style" and "location". The term "style" refers to the type of positions the fund manager takes for instance long/short in equity markets, taking positions that maintain market neutrality or betting on a merger and takeover event. The term "location" refers to the instruments that the hedge fund invests in; such as: fixed income, equity, currencies, commodities, bonds, futures and options, emerging markets or European assets, etc.

Connor, G. and Woo, M has discussed 10 strategy classifications:

i. Market Neutral: Market Neutral Funds have a low correlation with the overall market. These strategies generate returns that are independent of the market performance.

ii. Directional: Directional Funds specifically take bets on the market movements and their returns have a high correlation with the market return.

iii. Return enhancer strategies: Hedge funds that take on high risk and increase the overall portfolio volatility in order to seek very high expected returns fall under this category. (Amenc, Martellini & Vaissie, 2002) cite distressed securities, event driven funds and macro funds as risk enhancer strategies.

iv. Risk Reducer strategies: Hedge funds that aim to minimise risk and decrease the overall portfolio volatility and at the same time offering positive excess returns are termed to be using risk reducing strategies. (Amencc, Martellini & Vaissie, 2002) cite convertible arbitrage, fixed income arbitrage, long/short and short selling funds as risk reducer strategies.

v. Systematic Strategies: These strategies base their trading on complex trading programs. CTA.s (Commodity Trading Advisors) and managed futures fund invest in commodities and currency markets globally using such strategies.

vi. Discretionary Strategies: These strategies base their investment approach or trading decisions on the Hedge fund manager's judgement and selection skills.

vii. Multi-strategy funds: Hedge fund manager allocates capital across different strategies simultaneously or the investment strategies keep changing in line with the market conditions. LTCM fund (Long Term Capital Management) which is classified as a relative value fund also took positions in merger and takeover events.

viii. Global Funds: Funds that invest in countries globally are termed as Global Macro Funds. These funds invest in Emerging Markets, European Assets, or any other part of the world.

ix. Relative Value Funds: Hedge fund managers seek for mispriced securities. They go long on under-priced securities and short on overpriced securities. Mispriced securities can be hidden within complex derivatives. These funds trade in derivatives.

x. Fund of hedge funds approach: Wealth is allocated either in hedge fund with different strategies or by investing in various hedge funds implementing the same investment strategy.

4.1 Implementation:

The five widely used strategies that determine the hedge funds' performance have been investigated and analysed in depth. This section focuses on the implementation of each strategy given below and the risk associated with them.

1. Long/Short Equity:

Long/Short Equity strategies hold both long and short positions in mainly equity and equity derivative securities. Quantitative and fundamental techniques can be implemented to arrive at the investment decision. These strategies can essentially be varied or can be closely fixated on particular sectors. "These strategies range broadly in terms of levels of net exposure, leverage employed, and holding period, concentrations of market capitalizations and valuation ranges of typical portfolios. Equity Hedge managers would typically maintain at least 50% exposure to, and may in some cases be entirely invested in, equities - both long and short". (www.hedgefundreseach.com)

SUMMARY STATISTICS 1994-2010: Source: (www.hennessegroup.com)

	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio
Hennessee Long/Short Equity Index	10.44%	7.59%	1.32
S&P 500 Price Index	6.07%	15.31%	0.45
Nasdaq Composite Index	7.88%	24.70%	0.42

Table 1

	Number of Months		% of Months
	Positive	Negative	Positive
Hennessee Long/Short Equity Index	150	66	69%
S&P 500 Price Index	135	81	63%
Nasdaq Composite Index	125	91	58%

Table 2

Largest Consecutive Loss				Value of $1000 (Invested at Inception)
%	Months	Peak	Valley	
-20.60%	16	Oct-07	Feb-09	$5,971
-52.56%	16	Oct-07	Feb-09	$2,886
-75.04%	31	Feb-00	Sep-02	$3,919

Table 3

Hennessee Long/Short Equity Index gained 10.44% with the highest Sharpe Ratio of 1.32 as compared to S&P 500 Price Index which generated 6.07% annualized compound return having a Sharpe Ratio of 0.45 and Nasdaq Composite Index which gained 7.88% annualized compound return and Sharpe Ratio 0.42.

Hedge funds employing this strategy have outperformed the market proxy's having highest number of positive months and lowest consecutive loss as seen in Table 2 and 3.

Implementation: Funds implementing this strategy go long on stocks that are under-priced and short on stocks that are overpriced. These funds have a positive exposure to the market. The fund manager will go long and short in stocks simultaneously in order to keep the overall Beta exposure low. This is done to have a zero beta exposure. These strategies are implemented in the following ways:

a. Growth strategies: By using analytical techniques in which the investment proposal is based on appraisal of the valuation of the underlying companies which are forecasted to have growth in earnings and an increase in wealth beyond those of the wider stock market. Investment proposal concentrates on features of the company's financial statements, in comparison to other related securities and the market indicators. Strategies employ investment methods aimed to recognize lucrative prospects in stocks of corporations which are making or are anticipated to make unusually high profits as opposed to industry standards.

b. Value strategies: By using investment methods aimed to recognize lucrative prospects in stocks of corporations that trade a valuation metrics. With the help of the matrices fund managers conclude whether the securities are low-priced and undervalued in comparison with appropriate benchmarks. Fundamental Value strategies usually concentrate on equities that presently generate high cash flow, but trade at discounted valuation multiples, perhaps due to narrow

projected growth prospects or mostly out of favourable conditions that are specific to a sector or a particular holding.

c. Quantitative Direction based strategies: By using sophisticated quantitative techniques such as Factor based and Statistical Arbitrage/Trading strategies of evaluating price data to determine information about future price movement and relationships between securities, selection of securities for buying and selling. Under Factor-based investment strategies the investment proposal is based on the systematic analysis of common relationships between securities. Statistical Arbitrage/Trading strategies consist of strategies in which the investment proposal is based on taking advantage of pricing differences which may take place as a function of expected mean reversion intrinsic in security prices. Trading strategies based on technical analysis and high frequency techniques are also employed. These strategies are used to exploit new information that the manager believes has not yet been accurately discounted into the present security prices. "Quantitative Directional Strategies basically hold varying levels of net long or short equity market exposure over various market cycles" (www.hedgefundresearch.com).

d. Short-Biased strategies: Uses analytical techniques where the investment proposal is based on appraisal of the valuation of the underlying companies with the aim of ascertaining overpriced companies. Under the Short Biased strategies the investment level may differ and the degree of exposure over various market cycles also varies. The manager sustains a stable short exposure and anticipates outdoing traditional equity managers in falling stock markets. "Investment theories may be fundamental or technical in nature and manager has a particular focus, above that of a market generalist, on identification of overvalued companies and would expect to maintain a net short equity position over various market cycles" (www.hedgefundresearch.com).

2. Global Macro:

Hedge funds implementing this strategy have a global perspective and take directional bets. Global Macro funds have the highest risk-return trade-off. These funds are highly leveraged. This strategy is designed to exploit the changes in the market movements. The investment decision is based on the overall economic and political conditions in various countries. Managers employing this strategies use forecasts and analysis about interest rate trends, government policies and regulations, political news, etc. It is one of the most extensively used strategy as it provides fund managers the flexibility to use any instrument and in any market. (Koh et al, 2002, Kat and Miffre, 2002, Hedge Fund Strategies)

Commodity Trading Advisors (CTA) funds that take positions in futures and options in commodity markets or in swaps fall under Global macro sub - strategies (Stefanini, 2006). CTAs trade in commodities, stock indexes as well as other financial instruments. (Tran, 2006). They are also referred to as managed future fund in some literature (Coggan, 2011).

SUMMARY STATISTICS 1994-2010: Source: (www.hennessegroup.com)

	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio
Hennessee Global/Macro Index	10.52%	9.69%	1.06
S&P 500 Price Index	6.07%	15.31%	0.45
MSCI The World Index - Price	5.39%	15.41%	0.4

Table 4

	Number of Months		% of Months
	Positive	Negative	Positive
Hennessee Global/Macro Index	142	74	66%
S&P 500 Price Index	135	81	63%
MSCI The World Index - Price	130	86	60%

Table 5

Largest Consecutive Loss				Value of $1000 (Invested at Inception)
%	Months	Peak	Valley	
-23.63%	16	Oct-07	Feb-09	$6,054
-52.56%	16	Oct-07	Feb-09	$2,886
-55.37%	16	Oct-07	Feb-09	$2,575

Table 6

Hennessee Global Macro Index gained 10.52% with the highest Sharpe Ratio of 1.06 as compared to S&P 500 Price Index which generated 6.07% annualized compound return having a Sharpe Ratio of 0.45 and MSCI the World Index-Price which gained 5.39% annualized compound return and Sharpe Ratio 0.40.

Hedge funds employing this strategy have outperformed the market proxy's having highest number of positive months and lowest consecutive loss as seen in Table 5 and 6.

Implementation: Fund managers invest in instruments like stocks, commodities, bonds, currencies and derivatives globally. Managers employ a wide range of strategies wherein the investment decision is based on changes in underlying economic factors and the effect they have on stocks, commodity, fixed income, currency markets. A variety of techniques such as discretionary and systematic analysis, combinations of top down and bottom up approach, quantitative and fundamental approaches are used to implement this strategy.

Macro strategies are distinct from Relative Value strategies and Long/Short Equity. Unlike Relative Value, Macro strategies base their investment decision on predicted movements in the underlying rather than realization of a valuation discrepancy between securities. As compared to Long/Short Equity the investment proposal is based on the impact of the changes in underlying macroeconomic factors on the value of a security rather than the fundamental characteristics of a company (www.hedgefundresearch.com). These strategies are implemented in below given ways:

a. Active strategies: Managers employ both discretionary and systematic Macro strategies. Active trading methods involving high frequency position turnover or leverage are adopted. These strategies comprise of diverse, distinguishable sub- categories like Long/Short Equity or Market Neutral equity or a combination of a number of sub-strategies. "The investment process

is based on systematic, quantitative assessment of macroeconomic variables in which the portfolio positioning is based on convergence of differentials between markets, not necessarily highly correlated with each other, but currently diverging from their historical levels of correlation" (www.hedgefundresearch.com). The focus of these strategies is on the fundamental relationships across both inter and intra-asset classes. The holding period of these strategies is shorter than in other strategies. These strategies are different from others in terms of its swift market response to new information and high volume of turnover in liquid but highly volatile and unsteady market positions.

b. Commodity strategies:

These strategies depend on the assessment of market data. They concern mainly with Soft Commodity markets concentrating mainly on positions in grains (wheat, soybeans, corn, etc.) or livestock markets. The investment process is based on fundamental, systematic or technical analysis. Agricultural strategies have major investments in both Emerging and Developed Markets. "Commodity – Agricultural strategies expect to have greater than 50% of portfolio in dedicated Agricultural exposure over a given market cycle" (www.hedgefundresearch.com).

They strategies concern mainly with Energy commodity markets concentrating mainly on positions in Crude Oil, Natural Gas and other Petroleum products. The investment process is based on fundamental, systematic or technical analysis. These strategies have major investments in both Emerging and Developed Markets.

"Commodity - Energy strategies expect to have greater than 50% of portfolio in dedicated Energy exposure over a given market cycle" (www.hedgefundresearch.com).

They strategies concern mainly with Energy commodity markets concentrating mainly on positions in Hard Commodity markets focusing primarily on positions in Metals (Gold, Silver, Platinum, etc.). The investment process is based on fundamental, systematic or technical analysis. These strategies have major investments in both Emerging and Developed Markets. "Commodity - Metals strategies typically would expect to have greater than 50% of portfolio in dedicated Metals exposure over a given market cycle" (www.hedgefundresearch.com).

These strategies comprise of both discretionary and systematic commodity strategies. In Systematic commodity the investment process is a function of mathematical, algorithmic and technical models. There is little or no influence of individuals over the investment decision. Strategies are aimed to detect opportunities in markets that demonstrate trending or momentum across commodity assets classes, with related additional exposure in commodity sensitive equities or other derivative instruments. Strategies involve quantitative techniques that emphasis on statistically robust or technical patterns in the yield series of the asset. They focus on highly liquid instruments. These strategies are most effective in a situation presenting continuous and distinct trending behaviour. "Systematic Commodity strategies expect to have greater than 35% of portfolio in dedicated commodity exposure over a given market cycle" (www.hedgefundresearch.com).

Discretionary Commodity strategies are dependent on the fundamental evaluation of market data as they relate chiefly to commodity markets including positions in energy, agricultural, resources or metal assets. "Investment decisions are based on the evolution of investment themes the Manager expect to materialize over a relevant timeframe, which in many cases contain contrarian or volatility focused components". Managers trade in developed and emerging markets, concentrating on equity markets, fixed income markets and currency using spread trades.

“Discretionary Commodity strategies expect to have greater than 35% of portfolio in dedicated commodity exposure over a given market cycle” (www.hedgefundresearch.com).

c. Currency strategies:

Discretionary: These strategies are dependent on the fundamental evaluation of market data as they relate chiefly to currency markets comprising of positions in both listed and unlisted global foreign exchange markets. The investment process comprises of top down analysis of macroeconomic variables and is based on the development of investment ideas of the Manager over a relevant timeframe. Managers trade in developed and emerging markets concentrating on equity markets, fixed income markets, currency by using spread trades. “Discretionary Currency strategies typically would expect to have greater than 35% of portfolio in dedicated currency exposure over a given market cycle” (www.hedgefundresearch.com).

Systematic: The investment processes is a function of mathematical, algorithmic and technical models, with little or no influence of individuals over the investment decision. Strategies are designed to detect opportunities in markets that demonstrate trending or momentum across currency assets classes, with related additional exposure in sovereign fixed income. Strategies involve quantitative techniques that emphasis on statistically robust or technical patterns in the yield series of the asset.

They focus on highly liquid instruments. These strategies are most effective in a situation presenting continuous and distinct trending behaviour. “Systematic Currency strategies expect to have greater than 35% of portfolio in dedicated currency exposure over a given market cycle” (www.hedgefundresearch.com).

3. Market Neutral Strategies:

“It can be thought of as a portfolio construction technique that encourages the use of both long and short positions, where the securities are selected from a particular asset class, but the risk of the asset class itself is neutralized” (Jacobs, B. and Levy, K., 2005).

Market Neutral strategies aim to take advantage of supposed mispricing in individual securities and building portfolios that provide the surplus return linked with those securities, irrespective of underlying market moves. This can be achieved by having a portfolio with long and short positions in various securities and/or a portfolio of these securities combined with long and short positions in derivative securities such that the portfolios overall exposure to the key risk factors such as equity markets and interest rate risks is offset.

Fund can be market neutral by having equal exposure in long and short positions. The net exposure of these funds to the market will be zero per cent and the gross exposure will be 100 per cent. Fund managers buy low and sell high where the buying and selling in securities is simultaneous.

SUMMARY STATISTICS 1994-2010: Source: (www.hennessegroup.com)

	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio
Hennessee Market Neutral Index	5.49%	3.75%	1.38
S&P 500 Price Index	6.07%	15.31%	0.45
Barclays Aggregate Bond Index	6.38%	3.78%	1.59

Table 7

	Number of Months		% of Months Positive
	Positive	Negative	
Hennessee Market Neutral Index	163	53	75%
S&P 500 Price Index	135	81	63%
Barclays Aggregate Bond Index	149	67	69%

Table 8

Largest Consecutive Loss				Value of $1000 (Invested at Inception)
%	Months	Peak	Valley	
-16.83%	6	Jun-08	Dec-08	$2,619
-52.56%	16	Oct-07	Feb-09	$2,886
-5.15%	5	Jan-94	Jun-94	$3,044

Table 9

Hennessee Market Neutral Index gained 5.49% with the Sharpe Ratio of 1.38 as compared to S&P 500 Price Index which generated 6.07% annualized compound return having a Sharpe Ratio of 0.45 and Barclays Aggregate Bond Index which gained 6.38% annualized compound return

and Sharpe Ratio 1.59. Hennessee Market Neutral Index underperformed Barclays Aggregate Bond Index both in terms of annualized return and Sharpe ratio but outperformed S&P 500 Price Index with a higher Sharpe ratio. Although it had the maximum number of positive months and shows that profits were more consistent.

Hedge funds employing this strategy have outperformed the market proxy's having highest number of positive months and consecutive losses made are lower than the S&P 500 Price Index as seen in Table 8 and 9.

Implementation:

The power of market neutral strategy lies in an integrated approach and not just combining long and short portfolios.

Instruments: Instruments used in this strategy are same as the ones used in traditional or conventional strategies. These include equity, government bonds, corporate bonds, mortgaged backed securities, convertible bonds, futures and options and warrants. Although this strategy involves use of derivatives more than the traditional investment approaches.

Methods: In- depth fundamental analysis, technical analysis, quantitative valuation and portfolio construction techniques are the methods used to make the investment decision. Merger arbitrage and convertible arbitrage are more reliable on fundamental analysis of individual securities and companies. Market neutral strategies depend on quantitative valuation methods for portfolio construction involving complex instruments.

Leveraged transactions: This strategy is dependent on leverage. Outright borrowing, repo arrangements, purchasing securities on margin, and short sale of borrowed securities are some of

the characteristics of this strategy. With the help of leverage the number of positions a strategy can take is higher.

Arbitrage Strategies: MNS is not a typical arbitrage strategy as there is a risk involved in these strategies but it is often termed as arbitrage strategy due to the simultaneous buying and selling of fundamentally related securities profiting from the price discrepancies of these securities. MNS can be subdivided into various sub – strategies. Each of these strategies makes use of instruments that are related fundamentally in some way. These strategies have a good performance track record and liquidity adequate for institutional investors.

a) Merger Arbitrage: "In merger arbitrage, the investor buys the stocks of companies that are takeover targets and sells short the stocks of companies that are the potential buyers or acquiring companies. The overall portfolio will be roughly immune to movements in the general market, as any changes in the values of the stocks resulting from general market movements will cancel out, long and short, while the portfolio will benefit if its constituent stocks perform as expected, with the stocks of the takeover candidates rising in price as the takeover approaches and the stocks of the potential buyers falling upon completion of the takeover" (Jacobs, B. and Levy, K., 2005). The instruments in merger arbitrage are related through the expected convergence of the two companies share prices. These strategies are relatively less volatile.

b) Convertible Arbitrage: This strategy consists of going long on convertible bonds or warrants besides hedging by going short on underlying stock. The convertible bonds and warrants pricing is a function of the underlying stocks price and the expected future volatility in the returns, risk free interest rates and corporate treasury yield spread specific to the issuer. Due to convertible debt market illiquidity compared to equity markets, convertible bonds and warrants sometimes are inaccurately priced.

c) Government Bond Arbitrage: The bonds and fixed-income derivatives used in sovereign fixed-income arbitrage are fundamentally related through their exposures to interest rate movements.

d) Market Neutral Equity:

"A market neutral equity portfolio holds long stocks that are expected to appreciate in value and sells short a roughly equivalent amount of stocks that are expected to perform poorly, keeping the benchmark-relative risks of the long and short positions equal. Gains or losses on the long positions resulting from movements in the general stock market will be approximately offset by similar-size losses or gains on the short positions, leaving the spread between the returns on the long and short positions. If the securities behave as expected, with the longs outperforming the shorts, this spread will result in a positive return from security selection. Market neutral bond portfolios can be constructed in a similar fashion to be neutral to movements in underlying interest rates" (Jacobs, B. and Levy, K., 2005).

The equities held long and sold short in equity market neutral portfolios are fundamentally related through their exposures to the broad underlying market. Equity Market Neutral strategies implement quantitative techniques of examining price data to determine information about future price movement and relationships between securities and select securities for buying and selling. Factor-based investment strategies and Statistical Arbitrage/Trading strategies are used. Portfolios that are neutral to one or more variables are built - such as equity markets in dollar or beta terms. Equity Market Neutral strategies are designed to improve the return profile of the positions held. "Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short" (www.hedgefundresearch.com).

4. Event Driven:

Under this strategy hedge funds are involved in loan workouts, corporate restructuring or participating in the management of the companies they are trying to help turn around. Managers hold positions in companies that are presently involved or are likely to be involved in various corporate transactions such as mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or any other type of modifications to the capital structure. This type of transactions involves security type which is senior, subordinated or junior in the capital structure. In Event Driven strategies exposure from a mixture of sensitivities to equity markets, credit markets and company specific developments exists. Investment propositions are based on fundamental analysis (www.hedgefundresearch.com).

SUMMARY STATISTICS (1994-2010): Source: (www.hennessegroup.com)

	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio
Hennessee Arbitrage/Event Driven Index	9.97%	5.14%	1.83
S&P 500 Price Index	6.07%	15.31%	0.45
Barclays Aggregate Bond Index	6.38%	3.78%	1.59

Table 10

	Number of Months		% of Months Positive
	Positive	Negative	
Hennessee Arbitrage/Event Driven Index	178	38	82%
S&P 500 Price Index	135	81	63%
Barclays Aggregate Bond Index	149	67	69%

Table 11

Largest Consecutive Loss			Value of $1000 (Invested at Inception)
%	Peak	Valley	
-22.03%	Oct-07	Dec-08	$5,534
-52.56%	Oct-07	Feb-09	$2,886
-5.15%	Jan-94	Jun-94	$3,044

Table 12

Hennessee Event Driven Index gained 9.97% with the highest Sharpe Ratio of 1.83 as compared to S&P 500 Price Index which generated 6.07% annualized compound return having a Sharpe

Ratio of 0.45 and Barclays Aggregate Bond Index which gained 6.38% annualized compound return and Sharpe Ratio 1.59.

Hedge funds employing this strategy have outperformed the market proxys having highest number of positive months and the consecutive losses made are lower than S&P 500 Price Index as seen in Table 11 and 12.

Implementation: Fund Managers obtain distressed securities in the hope that it will increase in value. Their decisions are based on fundamental analysis of these securities – valuation of assets and securities of distressed firms.

a) Distressed Restructuring Strategies: Distressed securities are issued by a company's or nations central banks are currently in default, under bankruptcy protection or are in distress and expected to go in that direction. These securities are below investment grades and include corporate credit or emerging market government fixed income. Portfolio consists of investments in corporate fixed income instruments, corporate credit instruments of companies trading at huge discounts to their value at issuance or par value at maturity because of either formal bankruptcy proceeding or financial market perception of near term proceedings. These instruments are traded publicly. Distressed securities traded at deep discounts to a rational appraisal of their risk adjusted value. Volume of investment in distressed securities has increased. (Koh et al, 2002, Kat and Miffre, 2002). "Distressed Strategies mostly use debt approximately more than 60% but also may maintain related equity exposure". (www.hedgefundresearch.com)

b) Special Situations: Strategies are aimed to explore opportunities in stocks and related instruments of companies that are involved in a corporate transaction, security issuance or repurchase, asset sales, and division spin-off. These involve transactions where formal announcements are made as well as ones where no formal announcements have been made. The

focus is mostly on a broad range of investing in corporate life cycle comprising of not only distressed security but bankruptcy and post-bankruptcy security issuance, announced acquisitions, division spin-offs, asset sales and other security issuance impacting an individual capital structure. “Strategies mostly use equity approximately more than 60% but also have debt exposure, and focus more on post-bankruptcy equity exposure and exit of restructuring proceedings” (www.hdgefundresearch.com).

c) Credit Arbitrage Strategies: These strategies are designed to separate lucrative opportunities in corporate fixed income securities which consist of senior and subordinated claims, bank debt, constructing positions with insignificant credit market and government exposure, sovereign, equity, convertible or other obligations. The focus of the strategy is on fixed corporate obligations and other securities are held as a part of positions within these structures. It involves fundamental credit analysis to assess the possibility of an upgrading in the issuer's creditworthiness. In general these securities trade in liquid markets and there is occasional involvement of fund managers in the company management. There is no net credit market exposure.

d) Fixed Income: Corporate strategies: These strategies involve market hedges which differ in the levels to which they restrict fixed income market exposure.

e) Activist strategies: Fund Managers may acquire representation on the company's board aiming to bring about a change in the policies of the company or for the purpose of strategic management, carry out division spin-offs or asset sales, part or whole corporate divestiture, dividend or share buybacks, and changes in management. “Activist strategies would expect to have greater than 50% of the portfolio in activist positions, as described” (www.hedgefundresearch.com)

5. Relative Value Arbitrage:

Fund managers buy securities expected to appreciate at a current low price while simultaneously selling short a related security expected to depreciate. Funds have long and short positions in underrated equities which trade below their intrinsic value (underrated equities that have low price-to-earnings ratios or low price-to-book value ratios). Managers' emphasis on companies that create significant free cash flow and consume cash for debt retirement, share repurchase programs, and other ways employed to create shareholder value.

SUMMARY STATISTICS 1994-2010: Source: (www.hennessegroup.com)

	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio
Hennessee Value Index	10.64%	8.69%	1.18
S&P 500 Price Index	6.07%	15.31%	0.45
Nasdaq Composite Index	7.88%	24.70%	0.42

Table 13

	Number of Months		% of Months Positive
	Positive	Negative	
Hennessee Value Index	149	67	69%
S&P 500 Price Index	135	81	63%
Nasdaq Composite Index	125	91	58%

Table 14

Largest Consecutive Loss				Value of $1000 (Invested at Inception)
%	Months	Peak	Valley	
-30.32%	16	Oct-07	Feb-09	$6,169
-52.56%	16	Oct-07	Feb-09	$2,886
-75.04%	31	Feb-00	Sep-02	$3,919

Table 15

Hennessee Value Index gained 10.64% with the highest Sharpe Ratio of 1.18 as compared to S&P 500 Price Index which generated 6.07% annualized compound return having a Sharpe Ratio

of 0.45 and Nasdaq Composite Index which gained 7.88% annualized compound return and Sharpe Ratio 0.42.

Hedge funds employing this strategy have outperformed the market proxy's having highest number of positive months and lowest consecutive loss as seen in Table 14 and 15.

Implementation: Managers hold positions where price discrepancy exists and is identified in the relationship between various securities. Fundamental and quantitative techniques are implemented to make the investment decision. Instruments such as equity, fixed income, derivative, etc. are employed. Fixed income strategies are dependent on quantitative techniques to assess the prevailing relationship between instruments and also ascertain profitable positions where risk adjusted spread between these instruments provide an attractive investment opportunity. RV also involves corporate transactions but its exposures are based on pricing discrepancy between related securities.

a. Convertible Arbitrage strategies: A convertible bond of a company is short while simultaneously buying the common stock of that same company. "Fixed Income - Convertible Arbitrage strategies are based on realization of a spread between related instruments in which one or more components of the spread is a convertible fixed income instrument". The investment technique aims to detect profitable opportunities between the price of a convertible security and that of a non-convertible security generally issued by the same person. The positions retained under this strategy are sensitive to the issuer's creditworthiness, the issuer's equity valuation, implied and realized volatility of the underlying instruments, interest rates levels, along with other common market sensitivities.

b. Fixed Income - Asset Backed strategies: "These strategies depend on realization of a spread between related instruments in which one or more components of the spread is a fixed income

instrument backed physical collateral or other financial obligations (loans, credit cards) other than those of a specific corporation". The investment technique aims to detect profitable opportunities amongst a range of fixed income instruments. These instruments are securitized by collateral commitments comprising loans, receivables, loans pooled together, real estate, equipment or machinery. Investment proposal is based on the spread, the nature and quality of the collateral, the liquidity of the underlying instruments, issuance and movements in collateralized fixed income instruments. In many cases, investment managers hedge, limit or offset interest rate exposure in the interest of isolating the risk of the position to strictly the yield disparity of the instrument relative to the lower risk instruments.

c. Fixed Income - Corporate strategies: The strategy is focused on realization of a spread between related instruments in which one or several components of the spread is a corporate fixed income instrument. The investment procedure is aimed to segregate profitable opportunities among a range of fixed income instruments. The focus is on "realizing an attractive spread between multiple corporate bonds or between a corporate and risk free government bond".

d. Fixed Income – Sovereign strategies: The strategy is focused on realization of a spread between related instruments in which one or several components of the spread is a sovereign fixed income instrument. The investment procedure is aimed to segregate profitable opportunities among a range of fixed income instruments. The focus here is on realizing an attractive spread between multiple sovereign bonds or between a corporate and risk free government bond. Fixed Income Sovereign strategies depend on investment techniques such as quantitative and fundamental discretionary and are highly dependent on top-down macro

influences. These funds have at least 50% exposure to global sovereign fixed income markets. These funds maintain lower net exposure than similar strategies in Macro Funds.

e. Volatility strategies: These strategies are a mix of market neutral, directional, event driven or equity long/short strategies. They have exposures in various listed or unlisted instruments and can be varying or nonaligned to the direction of implied volatility. Directional volatility strategies have exposure to the direction of implied volatility of a particular asset or to the trend of implied volatility in broader asset classes. Arbitrage strategies aim to segregate opportunities between the price of several options or instruments having implicit optionality. Volatility arbitrage has sensitivities to levels of implied and realized volatility, interest rates levels and the issuer's equity valuation.

4.2 **Risks in Hedge Fund Strategies**:

Risk levels vary across different strategies. The risk involved in a strategy will be depending on a wide range of factors such as volatility, improbability of event occurring, the models and methods used in the investment process: problems introduced by the investment process such as errors in valuation process, incorrect information, inefficient models, errors in portfolio building and incorrect risk measurement and most importantly the degree of leverage employed. Every fund has a distinct investment style and involves explicit risk i.e., not dependent on market movements.

The basic protection against uncertainty is diversification. Risk lies in the lack of diversification of securities and lack of diversification of insights. The sources of improbability can be the unforeseen changes at company specific level, changes in the economy and regulation, legal and

credit events. Diversification across different securities protects against company-specific risks. Diversification may reduce credit risk.

Political Risk:

Political risk arising out of rampant political uncertainty also affects the hedge funds. The impact of political uncertainty and the interference of politicians in the financial markets especially after the financial crisis have led to a political risk that hedge funds need to take into consideration for even the most basic trades. Dithering of the Eurozone, Quantitative easing, and upheavals in the Middle East has made it difficult to predict market movements for hedge funds. The field of politics affects a wide range of hedge fund strategies and hence managers are considering it a vital risk and taking necessary measures to tackle it.

Counterparty Risk:

Counterparty credit risk arises when hedge funds enter into transactions, including derivatives contracts, with regulated financial institutions. Some regulators regard counterparty credit risk as the primary channel for potentially creating systemic risk (William Orice, 2009).

Liquidity risk:

Liquidity and manager risk is faced by various asset classes. Similar risk is faced by hedge funds as well. The amount to which an asset can be sold or bought is classified as Liquidity risk. In the case of hedge funds a lock up period is employed during which they cannot remove any money and this situation is similar for private equity funds.

Managers Risk:

The risk that arises from the management of funds in termed as **Managers risk**. There is a specific risk known as style drift that mainly refers to a fund manager "drifting" away from an

area of specific expertise. Leverage risk, valuation risk, concentration risk and capacity risk are the main Manager risk factors.

When the net asset value of investments is inaccurate it becomes a major concern and this is termed as **Valuation risk**.

When too much money is placed in one particular strategy **capacity risk** arises and this risk may lead to deterioration in fund performance.

When the fund has too much exposure to a particular investment, sector, trading strategy and group of correlated funds it leads to **concentration risk**.

It is absolutely essential to efficiently to manage these factors and they can be managed through defined controls over conflict of interest, restrictions on allocation of funds, and set exposure limits for strategies.

Leverage Risk:

A leveraged investment strategy basically invests additional money than it has funds to invest. When things go wrong, losses can exceed the invested wealth, and as a result the fund can lose far more than it started with. The use of Leverage introduces an additional participant to a transaction and in some cases multiple participants to the transaction. This additional participant may affect the investment performance (Eichengreen, B., Park, B., 2001).

When investigating which strategy to select, investors should take into consideration facts such as:

i. If the strategy will make use of leverage

ii. The magnitude of leverage

iii. And the amount to which leverage contributes to the strategies anticipated profits.

Investors should be aware that leverage comes in various forms, and can act together with other risk factors, as well as liquidity, so as to amplify underlying risks, as well as returns. Thus, use of leverage can intensify the return to a particular strategy but also increases the risk. Leverage magnifies all the risks. If a strategy does well leverage multiplies profits but if it under performs then the losses also get multiplied.

Hedge funds and Equity Risk:

Hedge funds and equity is not a good combination. When things go awry in the stock market its effects are seen on hedge funds as well as a major fall in value of the equity is complemented with a fall in market liquidity and a broadening of a majority of spreads. Market Neutral funds and Equity long/short funds need liquidity to maintain market neutrality as these funds have a tendency to go long in smaller stocks and short in larger stocks. Hence, these types of funds face a tough time when the market falls.

Mergers and Acquisitions get delayed when the market falls which has a negative impact on the performance of risk arbitrage funds. A plunge in stock prices leads to a widening of credit spreads which affects the performance of fixed income and convertible arbitrage funds. Thus the impact of a crash in the stock market is not restricted to funds that invest in equity alone. Even diversification among different funds will not alleviate its effect.

Hedge funds returns are non-correlated with market indices. Although hedging is a technique to reduce risk; hedge funds are susceptible to risk. As per the Hennessee Group report, hedge funds were roughly less volatile than the S&P 500 between 1993 and 2010.

Risk Management:

Proper risk management can be a noteworthy source of alpha. The manager of a fund will have the best knowledge of the risk-return trade off and should be given preference for the decisions

made regarding investments. Performance is not governed only by the alphas generated but also depends on the level of risk involved to achieve those returns. Hence, risk management is vital for the success of a hedge fund. The more effective the risk management process employed by the manager of a fund higher will be the contribution to generating alphas.

VaR has been widely used by a number of financial institutions to measure the downside risk. The Basle Committee had made it mandatory to employ VaR for managing risk. Hull (2000) Artzner et al. (1999) state that VaR has many disadvantages (non subadditivity) and recommend alternative risk management measures such as conditional VaR (CVaR), which equates the mean of the losses surpassing the VaR. While the VaR emphases only on the regularity of extreme events, CVaR emphases on both the regularity and size of losses in case of extreme events.

Lo, A. (2001) state that risk management techniques of mean variance analysis, value at risk and beta do not give a proper account of the risk exposures of hedge funds. They suggest that analysis of performance of hedge funds should include non-linearity, asymmetries in exposures and risk models that comprise of liquidity risk, credit risk, operational risk, macroeconomic indicators, volatilities, investment strategies and returns of indexes.

As hedge funds base their transaction on leverage there is high chance of credit and liquidity risk arising and this issue needs to be addressed. Limits on the degree of leverage can reduce liquidity and credit risk for hedge funds. Risk preferences of hedge fund managers can also affect sound risk management practices. The performance based fee structure of hedge fund managers can encourage unnecessary risk taking by them. At the same time the risk preferences of investors should be taken into account while defining risk exposures for hedge funds as they directly impact the decisions of hedge fund managers.

Transparency in risk involved and investor awareness and understanding of risk and the investment process is fundamental for risk management practices. Stringent risk management practices comprising of sophisticated risk models needs to be executed. Implementation of models that evaluate manager performance by assessing the strategies employed and its intrinsic risk both pre and post investment. Models that disclose exposures to systematic market risks should be implemented. Scarce data is accessible regarding the strategies of hedge funds which might falsely mute the risk most of the times but may lead to losses other times.

Historical performance has demonstrated to be a very weak interpreter of future performance and cannot be reliable. Due diligence procedures and monitoring of hedge fund investment process should be carried out.

The Hedge funds that employ leverage normally have a tendency to engage in extensive risk management practices (Barclay hedge, 2011). In comparison with investment banks, hedge fund leverage is relatively low; according to a National Bureau of Economic Research working paper, the average leverage for investment banks is 14.2, compared to between 1.5 and 2.5 for hedge funds. Some types of funds, including hedge funds, are perceived as having a greater appetite for risk, with the intention of maximizing returns, subject to the risk tolerance of investors and the fund manager (Barclay hedge, 2011). Managers will have an additional incentive to increase risk oversight when their own capital is invested in the fund as in the case of hedge funds (Cassar & Gerakos, 2010).

5. PERFORMANCE ANALYSIS

Performance figures for hedge funds are tough to get, as the funds have traditionally not been obligated to report their performance to a regulatory authority and limitations against public offerings and marketing have resulted in managers declining to submit performance information publicly. However, hedge fund performance statistics are sometimes available in industry journals and databases. The style performance analysis of 3 main strategies (Long/Short Equity, Event driven and Global macro) and total 21 sub strategies under them based on their annual compound returns and the standard deviations in those returns has been carried out. Sharpe Ratios have been calculated to evaluate the performance of funds by strategy.

5.1 Analysis of Hedge Fund Strategies:

Long/Short Equity Index:

The index is an equally weighted average of all the hedge fund managers that include the Financial Equities, Growth, Healthcare/Biotech, Value, Market Neutral, Opportunistic, Short Biased, Technology, and Telecom/Media style indices.

Event Driven/Arbitrage:

The index is an equally weighted average of all the hedge fund managers that include the Convertible Arbitrage, Distressed, Event Driven, Fixed Income, High Yield, Merger Arbitrage, Multiple Arbitrage, and PIPES/Private Financing style indices.

Global/Macro:

The index is an equally weighted average of all the hedge fund managers that include the Asia – Pacific, Emerging Markets, Europe, International, Latin America, and Macro style indices.

Performance table of Hennessee Hedge Fund Index (1994-2010):

INEDX	ANNUALISED COMPOUND RETURN	ANNUALISED STANDARD DEVIATION	SHARPE RATIO	RANK BASED ON SHARPE
S & P 500 Index	6.07%	15.31%	0.45	NA
Hennessee Hedge Fund Index	10.20%	6.70%	1.45	NA
Hennessee Arbitrage/Event Driven Index	12.38%	7.40%	1.59	1
Hennessee Long/Short Equity Index	10.44%	7.59%	1.32	2
Hennessee Macro Index	8.83%	8.02%	1.07	3

Table A Source: (www.hennessegroup.com)

Sub - Strategies:

SR. NO.	INEDX	ANNUALISED COMPOUND RETURN	ANNUALISED STANDARD DEVIATION	SHARPE RATIO	RANK BASED ON SHARPE
	Hennessee Hedge Fund Index	**10.20%**	**6.70%**	**1.45**	**NA**
1	**Hennessee Arbitrage/Event Driven Index**	**12.38%**	**7.40%**	**1.59**	**3**
2	Hennessee Merger Arbitrage Index	9.59%	3.80%	2.37	1
3	Hennessee Multiple Arbitrage Index	9.65%	4.34%	2.1	2
4	Hennessee High Yield Index	8.01%	6.91%	1.12	13
5	Hennessee PIPES/Private Financing Index	9.52%	6.89%	1.32	9
6	Hennessee Fixed Income Index	7.16%	6.53%	1.06	15

7	Hennessee Convertible Arbitrage Index	8.27%	5.95%	1.33	8
8	Hennessee Distressed Index	11.98%	7.26%	1.57	4
9	**HENNESSEE Long/Short Equity Index**	**10.44%**	**7.59%**	**1.32**	**9**
10	Hennessee Opportunistic Index	11.63%	7.69%	1.44	5
11	Hennessee Telecom and Media Index	6.77%	8.13%	0.82	19
12	Hennessee Technology Index	16.44%	13.42%	1.19	11
13	Hennessee Short Biased Index	-2.75%	18.31%	-0.08	23
14	Hennessee Market Neutral Index	5.49%	3.75%	1.38	7
15	Hennessee Value Index	10.64%	8.69%	1.18	12

16	Hennessee Growth Index	10.76%	11.44%	0.93	16
17	Hennessee Healthcare and Biotech Index	11.92%	18.10%	0.7	21
18	Hennessee Financial Equities Index	14.66%	10.89%	1.3	10
19	**Hennessee Global Macro Index**	**8.83%**	**8.02%**	**1.07**	**14**
20	Hennessee Latin America Index	12.07%	22.19%	0.62	22
21	Hennessee Europe Index	8.77%	9.48%	0.91	17
22	Hennessee Asia-Pacific Index	9.67%	11.67%	0.83	18
23	Hennessee International Index	12.96%	8.87%	1.4	6
24	Hennessee Emerging Market Index	9.85%	13.34%	0.76	20

Table B Source: (www.hennessegroup.com)

HENNESSEE HEDGE FUND INDEX vs. ASSET CLASS BENCHMARKS (1994-2010):

INDEX	ANNUALISED COMPOUND RETURN	ANNUALISED STANDARD DEVIATION	SHARPE RATIO
HHFI	10.20%	6.70%	1.45
S&P 500 Price Index	6.07%	15.31%	0.45
NASDAQ Composite Index	7.88%	24.70%	0.42
MSCI The World Index - Price	5.39%	15.41%	0.4
Barclays Aggregate Bond Index	6.38%	3.78%	1.59
Barclays High Yield Credit Bond Index	7.99%	9.18%	0.86
MSCI EAFE - Price	4.52%	16.86%	0.33
MSCI Pacific - Price	2.16%	18.98%	0.19

Table C Source: (www.hennessegroup.com)

Table B contains descriptive statistics of the 24 Hedge Fund Strategies in the Hennessee Hedge Fund database. Table C gives a descriptive analysis of the Hennessee Hedge Fund Index returns and the returns reported by the market proxies (asset class benchmarks).

Returns:

When only returns are observed in Table B it shows that the highest annualized compound return was achieved by the Technology Index (16.44%), followed by Financial Equities Index (14.66%), International Index (12.96%), Event Driven Index at (12.38%) and Latin American Index (12.07%).

Strategies that offer the lowest annualized compound return are Dedicated Short Bias (-2.75%), followed by Market Neutral Index (5.49%), Telecom and Media Index (6.77%), Fixed Income Index (7.16%) and High Yield Index (8.01%).

Whereas the annualized compound return of the Hennessee Hedge Fund Index whole database is (10.20%) and S&P 500 Index is (6.07) %. Even some of the bottom 5 strategies of the HHFI gave better performance than S&P 500 Index.

Risk - Adjusted Returns:

When risk (standard deviations) is taken into account through the Sharpe measure (the ratio of excess return and standard deviation), results are different. Higher the Sharpe measures better the performance by the strategy.

Funds offering the best risk return trade-off are the Merger Arbitrage Index with a Sharpe ratio of 2.37, followed by the Multiple Arbitrage Index having a Sharpe ratio of 2.1, Event Driven Index 1.59, Distressed Index 1.57 and Opportunistic Index 1.44 amongst the top 5 strategies.

The worst Sharpe ratio is obtained by the Dedicated Short Bias -0.08 (which is also in the worst performing funds when risk is not taken into account) followed by Latin American Index 0.62, Healthcare and Biotech 0.7, Emerging Market Index 0.76 and Telecom and Media 0.82.

Latin America has been the most volatile fund with annualized standard deviation of 22.19% followed by Dedicated short bias Index with annualized standard deviation of 18.31% while Market Neutral Index has been the least volatile amongst all other strategies having annualized standard deviation of 3.75% and Merger Arbitrage Index with 3.80% followed by Multiple Arbitrage 4.34%.

Comparing the returns of Hennessee hedge fund index with the market benchmarks (Table C) it can be illustrated that it outperformed the market index over the period of 1994-2010 with annualized return of 10.20% and annualized volatility of 6.70% with a Sharpe Ratio of 1.45. Thus, offering a better risk – return trade off.

5.2 Comparison of failed vs. successful funds by strategies (1994-2010):

Top 5 Performers:

Top 5 Performers	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio	Rank
Hennessee Merger Arbitrage Index	9.59%	3.80%	2.37	1
Hennessee Multiple Arbitrage Index	9.65%	4.34%	2.1	2
Hennessee Event Driven Index	12.38%	7.40%	1.59	3
Hennessee Distressed Index	11.98%	7.26%	1.57	4
Hennessee Opportunistic Index	11.63%	7.69%	1.44	5

Table 16 Source: (www.hennessegroup.com)

Bottom 5 Performers:

Bottom 5 Performers	Annualized Compound Return	Annualized Standard Deviation	Sharpe Ratio	Rank
HENNESSEE Dedicated Short Bias Index	-2.75%	18.31%	-0.08	1
HENNESSEE Latin America Index	12.07%	22.19%	0.62	2
HENNESSEE Healthcare & Biotech Index	11.92%	18.10%	0.7	3
HENNESSEE Emerging Markets	9.85%	13.34%	0.76	4
HENNESSEE Telecom and Media Index	6.77%	8.13%	0.82	5

Table 17 Source: (www.hennessegroup.com)

The best and the worst performing strategies:

1. **Event Driven strategy**:

The **Merger Arbitrage** and **Multiple Arbitrage** sub-sector performed extremely well having benefitted by growing volumes in mergers and acquisitions which touched its peak since 2007. With the annualised compound returns of 9.59% and 9.69% respectively.

Distressed managers benefited from favourable high yield bond and high number of leveraged loans being taken in the market with annualised compound returns of 11.98%. The overall Event Driven Index 1994-2010, annualized compound return of 12.38% outperformed all other strategies employed by hedge funds under the Hennessee Hedge Fund Index since January 1994.

2. **Dedicated Short Bias**:

This sector tends to perform well in times of instability in the financial markets especially equity market downturns. They performed well in the year 2008. It will generate profits in times of turmoil but may be difficult to maintain positive returns when market conditions improve. Overall they have been the worst performing sector over the period of 1994-2010 having reported lowest negative annualized compound return of (-2.75%) and Sharpe Ratio (-0.08). This sector has been extremely volatile having 18.31% annualized standard deviation.

3. **Emerging markets**:

This sector struggled to generate positive returns during trends of strengthening US Dollar and falling commodity prices in the year 2008. Investors in this sector incurred losses as the equity markets in the emerging economies fell globally. This sector is one of the worst performers amongst all other hedge funds by strategy over the period of 1994 – 2010 having reported annualized compound return of 9.85% and Sharpe Ratio 0.76. This sector has been very volatile having 13.34% annualized standard deviation. Improving conditions post the 2008 crisis saw a

growth in the returns generated by emerging markets funds. Low inflation rates and appreciation in the currencies of emerging economies can boost the growth of this sector as they become likely targets for investments.

4. **Convertible Arbitrage:**

The ban on short selling post 2008 may have affected the performance of funds in this sector as this makes it difficult for managers to delta hedge their positions. There was a lot of selling pressure on managers under relative value strategies funds. This period experienced widening credit spreads along with extreme volatility in the equity markets. These conditions are favourable for companies to issue convertible securities. In order to restrict debt companies were buying back convertible bonds as it is believed the companies have a better understanding of their own company valuations and credit ratings. Overall they have been amongst the top 10 performing sector over the period of 1994 - 2010 having reported annualized compound return of 8.27% and Sharpe Ratio (1.33). This sector has been highly volatile having 5.95% annualized standard deviation.

5. Equity Market Neutral:

Although this sector made losses during the 2008 crisis it has been amongst the top 10 performers in terms of annualized total return over the period of 1994 – 2010. They reported very low annualized standard deviation of 3.75% as well as returns of 5.49%. This helped them achieve a high Sharpe Ratio of 1.38. This sector performs well if stock correlations are low as profits can be made due to stock differentiation unlike the case until the period of 2010. As activity in the equity markets increases the performance of these funds will improve.

6. Fixed Income Arbitrage Index:

Due to volatility in interest rates and sell – offs in interest rate in the fixed income markets and lack of liquidity there was a lot of selling pressure on the managers. This resulted in the substantial outflows and impacts on government bond markets and corporate bonds. Overall they have been the worst performing sector over the period of 1994-2010 having reported low annualized compound return of (7.16%) and Sharpe Ratio (1.06). This sector has been particularly volatile having 6.53% annualized standard deviation.

7. **Healthcare Index:**

Healthcare sector suffered due to the regulatory reforms brought about in the US. This sector is affected by the issues of patent expirations and constant uncertainty linked to healthcare service. They have been amongst the worst performing sectors with annual compound return of 11.92%, and annualized volatility of 18.10% and a Sharpe Ratio of 0.7. Although in the coming years, Managers are positive and anticipate growing M&A activity for smaller firms.

5.3 Strategy Analysis:

What other elements besides the risk- return trade off, contribute to the selection criteria of strategies of a hedge fund? Each strategy can be assessed on the basis of their potential to generate absolute returns. Other factors that influence the selection criteria are Macro and Micro economic factors, sector specific issues, governmental, political and regulatory matters. The evaluation of these factors impacts the allocation decision and is extremely important to choose the timing of an investment and define the expected risk-return objective of each strategy. Elements contributing to hedge fund strategies are:

Hedge Funds approach to the market: The strategy that a fund implements depends upon the approach of the hedge fund to the market. The strategy will be designed on the lines of whether

the fund aims to eliminate market risk or take advantage of the market movements. The fund will thus be taking market neutral positions or market directional bets. Some markets are considered too risky for investments by a set of funds while others perceive them to be an avenue of huge profits.

Instruments used: The level of leverage and risk exposure that the hedge fund wants to take will determine the type of instruments used for the purpose of investments. The risk-return frame work will play a crucial role in this decision. The level of risk the investors prefer to take will determine whether they want to invest in derivatives, equities, bonds, mortgage backed securities, etc. the risk return trade off of different instruments will be different. Managers will select the instrument that best fits the need of investors.

Market sector the fund specializes in: The decision to invest in a particular market sector will depend on the expertise and experience of the fund managers in that particular sector. Even though steel sector may not be booming the fund manager may lobby to investors to invest in this sector based on his knowledge and insight about that sector.

Method used to select investments: Fund managers may use judgemental approaches or quantitative approaches for the purpose of valuation and selection of investments. Fundamental, technical or quantitative analysis and valuation models may be used for this purpose.

Level of diversification within the fund: Diversification is not just a function of number of securities in the portfolio but it is the degree to which each security or strategy has a unique risk personality. The risk appetite of investors will determine the level of diversification within the fund. Managers will have a highly diversified portfolio for investors who are risk averse and moderately diversified for the ones with high risk appetite.

6. CONCLUSION

There has been a lot of discussion about the fact that investors lost heavily in stocks over the last years due to the crash in the stock markets. There has not been much said about the performance of hedge funds. The Hennessee Hedge Fund Index gained +10.20% over the period January 1994 to December 2010, while the S&P 500 gained +6.07%, the Barclays Aggregate Bond Index gained +6.38%, and the NASDAQ Composite Index gained +7.88%.

Not only did hedge funds outperform stocks on a relative basis by more than +4% per year versus the S&P 500 Price Index, they did so with significantly less volatility. Hedge funds exhibited a standard deviation of 6.70% while the S&P 500 Price Index had a standard deviation of 15.31%.

Table C shows that the Sharpe Ratios for HHFI (1.45) are much higher than other asset class benchmarks S&P 500 (0.45), Nasdaq Composite (0.42), MSCI World (0.4).

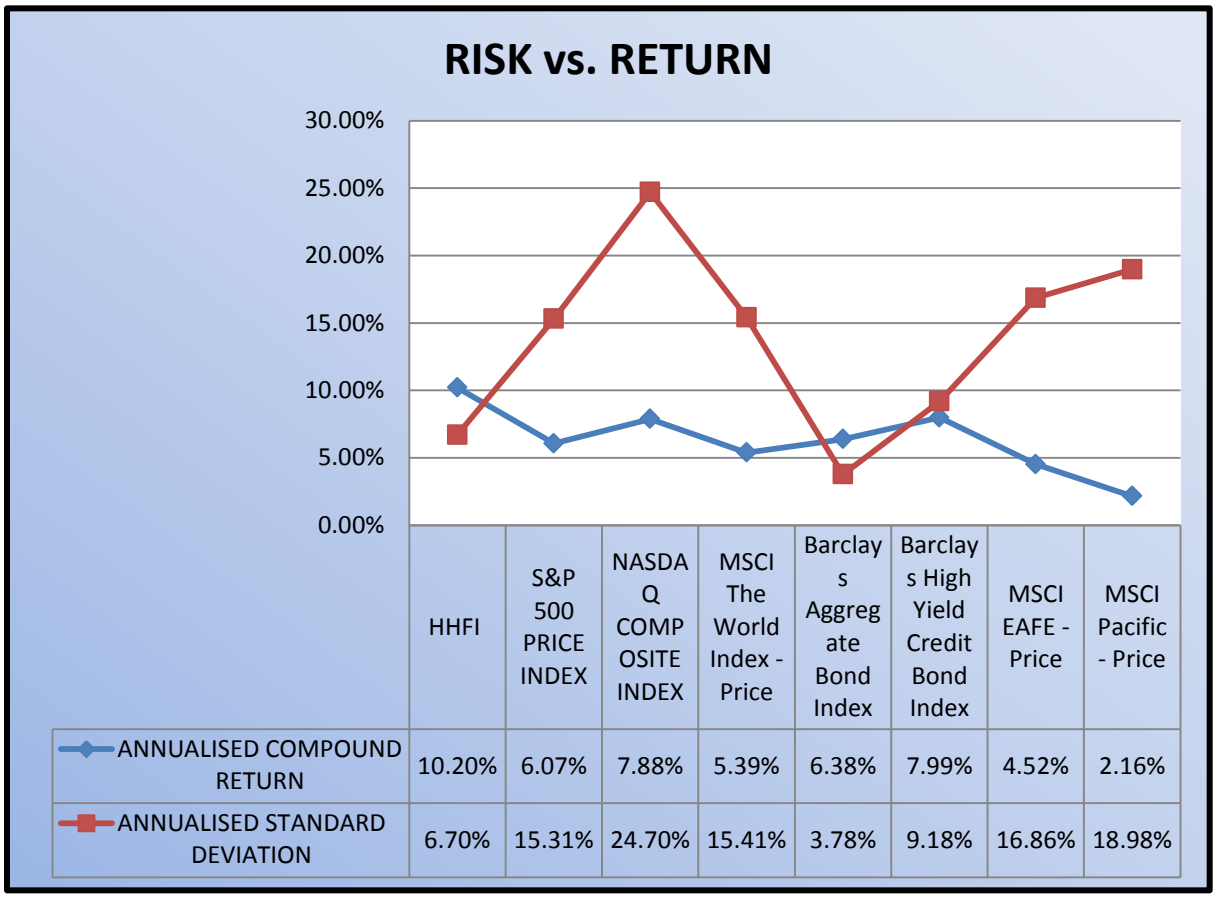
6.1 Performance of HHFI vs. BENCHMARKS (1994-2010): Source: Hennessee Group LLC

INDEX	ANNUALISED COMPOUND RETURN	ANNUALISED STANDARD DEVIATION
HHFI	10.20%	6.70%
S&P 500 Price Index	6.07%	15.31%
Nasdaq Composite Index	7.88%	24.70%
MSCI The World Index –	5.39%	15.41%

Price		
Barclays Aggregate Bond Index	6.38%	3.78%
Barclays High Yield Credit Bond Index	7.99%	9.18%
MSCI EAFE – Price	4.52%	16.86%
MSCI Pacific – Price	2.16%	18.98%

Table D

Risk vs. Return (1994-2010): Source: Hennessee Group LLC



	HHFI	S&P 500 PRICE INDEX	NASDAQ COMPOSITE INDEX	MSCI The World Index - Price	Barclays Aggregate Bond Index	Barclays High Yield Credit Bond Index	MSCI EAFE - Price	MSCI Pacific - Price
ANNUALISED COMPOUND RETURN	10.20%	6.07%	7.88%	5.39%	6.38%	7.99%	4.52%	2.16%
ANNUALISED STANDARD DEVIATION	6.70%	15.31%	24.70%	15.41%	3.78%	9.18%	16.86%	18.98%

Table E

Monthly Returns of HHFI (1994-2010):

In analysing the performance of the Hennessee Hedge Fund Index, the ability to outperform over the past years was in large part due to the ability to minimize drawdowns. The Hennessee Hedge Fund Index experienced 63 negative months with largest consecutive loss -21.54%, while the S&P 500 had 81 down months with the largest consecutive loss -52.56% and the Nasdaq Composite Index had 91 down months with the highest consecutive loss of -75.04%.

Index	Number of Months		% of Months Positive	Largest Consecutive Loss				Value of $1000 (Invested at Inception)
	Positive	Negative		%	Months	Peak	Valley	
Hennessee Hedge Fund Index	153	63	71%	-21.54%	16	Oct-07	Feb-09	$5,748
S&P 500 Price Index	135	81	63%	-52.56%	16	Oct-07	Feb-09	$2,886
Nasdaq Composite Index	125	91	58%	-75.04%	31	Feb-00	Sep-02	$3,919

Return of HHFI	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2010	-0.43%	0.87%	2.65%	1.42%	-3.31%	-1.36%	1.86%	-0.72%	3.51%	1.97%	0.42%	2.80%	**9.89%**
2009	0.58%	-1.11%	1.84%	4.21%	5.34%	0.78%	3.18%	1.71%	3.14%	-0.50%	1.48%	2.23%	**25.21%**
2008	-2.93%	0.77%	-2.10%	1.81%	1.96%	-1.38%	-1.86%	-0.92%	-6.75%	-6.81%	-3.17%	-0.06%	**-19.84%**
2007	1.32%	0.91%	1.01%	1.72%	2.20%	0.72%	0.30%	-0.89%	2.30%	2.78%	-1.92%	0.33%	**11.22%**
2006	3.39%	0.56%	1.77%	1.33%	-1.30%	-0.35%	-0.25%	1.02%	0.15%	1.55%	1.78%	1.28%	**11.40%**
2005	-0.36%	1.39%	-0.88%	-1.62%	1.16%	1.59%	2.26%	0.73%	1.68%	-1.42%	1.50%	1.66%	**7.85%**
2004	1.95%	0.98%	0.31%	-0.97%	-0.39%	0.52%	-1.07%	0.11%	1.50%	0.56%	2.70%	1.82%	**8.24%**
2003	0.72%	-0.23%	0.45%	2.63%	3.50%	1.35%	1.17%	1.58%	0.97%	2.48%	1.03%	1.76%	**18.80%**
2002	0.37%	-0.69%	1.43%	0.01%	-0.13%	-2.19%	-3.09%	0.51%	-1.62%	0.90%	2.27%	-0.56%	**-2.88%**
2001	2.42%	-0.91%	-1.48%	1.42%	1.31%	0.38%	-1.16%	-0.27%	-2.34%	1.37%	2.00%	1.67%	**4.36%**
2000	0.62%	6.83%	0.50%	-3.16%	-1.07%	3.39%	-0.04%	3.39%	-0.20%	-1.46%	-2.46%	1.96%	**8.16%**

1999	1.95 %	-0.97 %	3.30%	5.02%	0.91%	3.88%	0.76%	-0.15%	0.42%	1.20%	4.41%	6.70%	**30.78%**
1998	-0.52 %	2.79 %	2.89%	0.51%	-1.53%	0.25%	-0.59%	-7.10%	0.04%	0.49%	2.89%	1.70%	**1.41%**
1997	3.06 %	1.08 %	-0.67%	0.00%	3.41%	2.42%	3.60%	0.61%	3.28%	-0.79%	-0.18%	1.16%	**18.19%**
1996	2.81 %	0.64 %	1.18%	3.14%	2.46%	0.29%	-1.32%	1.89%	1.59%	1.57%	2.22%	1.20%	**19.08%**
1995	0.18 %	1.18 %	1.05%	1.93%	1.29%	1.78%	2.45%	2.27%	1.50%	-0.54%	1.71%	1.65%	**17.70%**
1994	2.14 %	-0.92 %	-1.80%	-0.83%	0.67%	0.43%	0.73%	1.44%	0.68%	-0.61%	-1.50%	-0.17%	**0.18%**

Table F

6.2 Down Market Analysis:

The analysis of the Hennessee hedge funds returns vs. S&P 500 in the worst periods for the S&P 500 Index from 1994 to 2010 using the three main Hennessee Hedge Fund Sub-Indices as proxies to identify which hedge fund strategies have historically protected capital the best during strong market sell-offs has been carried out.

Event	Period	S&P 500	HHFI	Event Driven Index	Long/Short Equity Index	Global/Macro Index
Sovereign Debt Crisis	May 2010-June 2010	-13.20%	-4.30%	-2.50%	-4.60%	-4.60%
Credit Crisis	Nov 2007-Feb 2009	-52.60%	-19.40%	-19.30%	-20.60%	-23.60%
Tech Bubble	Sep 2000-2002	-46.30%	-0.10%	8.40%	-4.40%	-0.60%
Long-Term Capital Management	July 1998-Aug 1998	-15.60%	-7.40%	-5.10%	-8.10%	-14.50%
Global Bond Meltdown	Feb 1994-June 1994	-7.80%	-0.40%	-0.10%	2.10%	-5.30%
Average		**-27.10%**	**-6.32%**	**-3.72%**	**-7.12%**	**-9.72%**

Table G

While all hedge funds strategies provide significant downside protection, analysis shows that non-directional strategies, such as arbitrage and event driven strategies, were best at minimizing drawdowns, protecting capital and lowering volatility with an average drawdown of -3.72%. HHFI reported drawdown of -6.32% while S&P 500 reported -27.10% on an average over the worst market crisis period.

i. Sovereign Debt Crisis**:** The viability of the worldwide economic retrieval is uncertain due to the mounting sovereign debt crisis and has consequently leaded to a severe sell-off in the stock markets in 2010. While the S&P 500 Index suffered double figure losses all hedge fund sub-strategies suffered only a third or less of the losses. Capital was best protected by the Arbitrage/Event Driven Strategy Index with only a -2.5% loss. Hennessee hedge fund Index reported a -4.30% loss while the S&P 500 Index reported a -13.2% loss during this period.

ii. Credit Crisis: The credit crunch developed into an extensive financial crisis that resulted in a global economic slowdown and gigantic sell-off across all asset classes. Capital was best protected by the Arbitrage/Event Driven Strategy Index with only a -19.3% loss, contributing in only 36% of the drawdown. The Hennessee hedge fund Index reported 19.40% loss while S&P 500 -52.60% loss. Strong performers during this time period were sub strategies under Event Driven Index such as: Merger arbitrage (-1.2%), fixed income (-8.5%) and multiple arbitrage (-13.2%).

iii. Tech Bubble: One more perplexing period for the financial markets was the spurting of the technology bubble. The Hennessee hedge fund Index made a loss of only -0.10% while the S&P 500 Index fell -46.3% during that period. Arbitrage/Event Driven Index

generated a gain of +8.4%. Strong performers during this time period were Convertible arbitrage (+16.6%), multiple arbitrage (+18.2%) and merger arbitrage (+5.5%).

iv. Long-Term Capital Management: The Russian Debt crisis and the disaster of Long-Term Capital Management created a lot of pressure on the markets. The Hennessee hedge fund Index suffered -7.40% losses. Arbitrage/Event Driven Index suffered -5.1% losses. It was once again the best performing index, contributing to only a third of the losses of the S&P 500 Index which suffered -15.6% losses. Strong performers during this period were Multiple arbitrage (-2.6%), convertible arbitrage (-3.0%), and merger arbitrage (-3.7%).

v. Global Bond Meltdown: In 1994 bond prices plummeted radically due to panic created amongst investors in response to the escalating worldwide interest rates. The Arbitrage/Event Driven Index and Long/Short Equity Index provided protection against the -7.8% drawdown in the S&P 500 Index. The was strong performance reported by the Arbitrage/Event Driven Index which only fell -0.1% as compared to S&P 500. Strong performance came from managers in event driven (+7.1%), distressed (+4.2%), and multiple arbitrage (+2.6%). The Hennessee hedge fund Index fell by a mere -0.40% during the meltdown.

Worst Months of S&P 500 vs. Hennessee Hedge Fund Index (1994-2010):

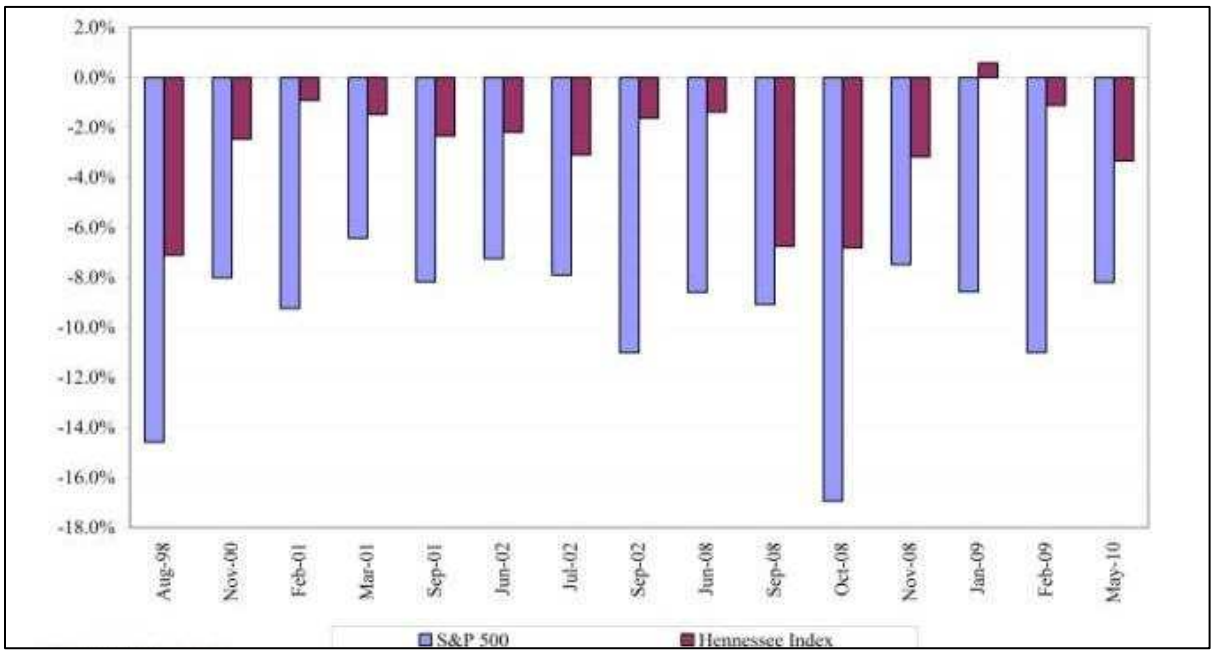


Table H

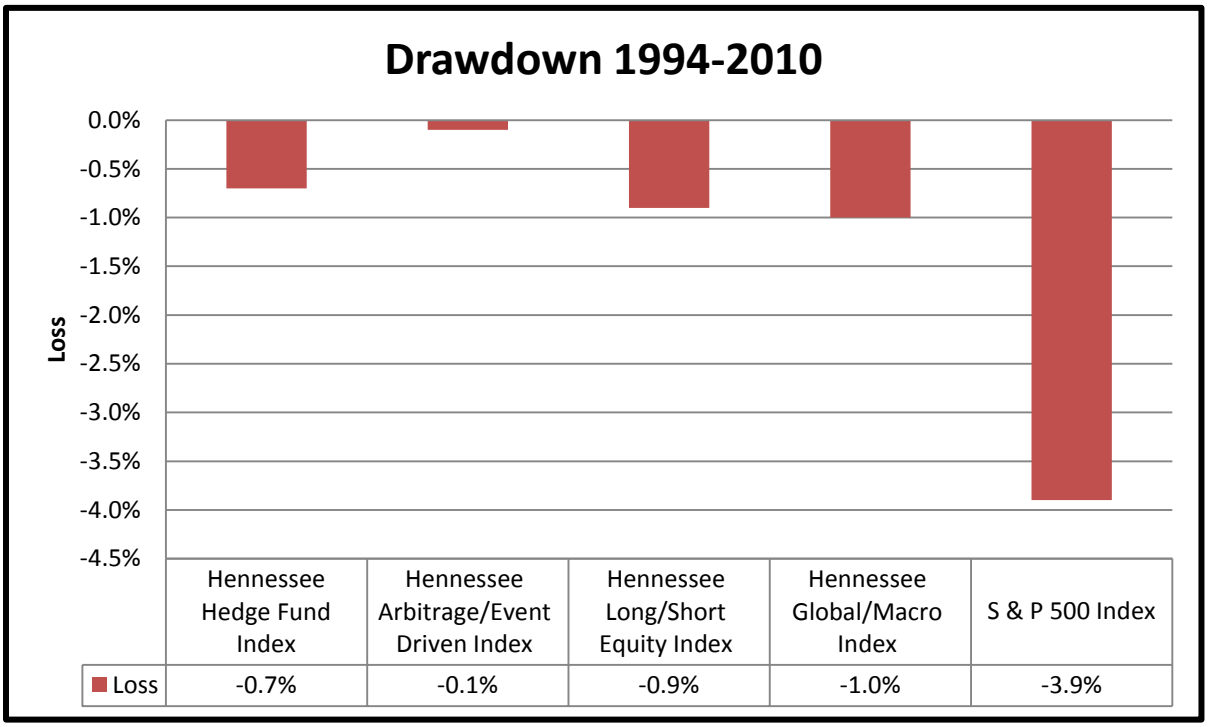


Table I

In months when the S&P 500 declined in value, hedge funds only participated in less than 30% of the loss. The Hennessee Arbitrage/Event Driven Index was once again the most successful at protecting capital in down markets with an average loss -0.1% versus the S&P 500 Index average loss of -3.9%. The Hennessee Long/Short Equity Index generated an average loss of -0.9%, while the Hennessee Global/Macro Index averaged a loss of -1.0%.

The ability to protect capital in the down markets allowed hedge funds to greatly outperform the S&P 500 Index on both an absolute and risk-adjusted basis. Since 1994, all three Hennessee Group Hedge Fund Sub-Indices have outperformed the S&P 500 Index with a fraction of the volatility. While the Hennessee Long/Short Equity has been the top performer on an annualized return basis +10.44%, the Hennessee Arbitrage/Event Driven Index has generated a comparable return of +9.9% with lower volatility. The Arbitrage/Event Driven Index has generated the highest Sharpe ratio among the hedge fund indices and is much higher than S&P 500 Index (1.83 vs. 0.45).

The value of $1000 invested in Hennessee Hedge Fund Index at the time of inception is worth $5748 now while the $1000 invested in S&P 500 and Nasdaq Composite Index is worth $2886 and $3919 respectively. This shows that hedge funds facilitated growth in capital. The value of investment in hedge funds is much higher than in other asset classes. Hedge funds compound higher absolute returns relative to traditional equity benchmarks with less volatility.

This down market analysis proves that it is not required to outperform in up months in order to outperform on the whole. The most value-added characteristic of hedge funds is their down side risk management, which is really where they generate alpha.

6.3 Hedge Fund Strategies & Managers:

Investors are looking for absolute return irrespective of the market conditions. There has been a shift in the performance standard. The leverage employed by hedge funds in order to generate these abnormal returns has been reduced as brokers' restricted debt. There is increasing pressure on managers to consistently deliver returns higher than the market under varying circumstances. Managers are constantly devising differential strategies to meet exceeding investor needs and to take advantage of changing situations. Strategies are constantly changing with changes in investment opportunities.

Investor confidence in hedge funds is returning as hedge funds are increasing transparency in their operations and employing enhanced risk analysis. Although this hinders strategy implementation effectively it has become utmost important to gain back investor confidence. The pressure on hedge fund managers is increasing with the need for increasing transparency and the ever rising competition. They have to spend more time in coming up with differential strategies and reducing operating costs as compared to competitors. By selecting either the top performing hedge fund strategies or by selecting the top performing hedge fund managers, one can outperform the overall Hennessee Hedge Fund Index and other benchmarks by a significant margin.

The top performing strategies over the past were: 1) Merger Arbitrage funds, 2) Multiple Arbitrage Funds 3) Distressed funds, which posted strong performance after default cycles in 2003, 2004 and 2009. All the 3 strategy funds are sub - categories of Arbitrage/Event Driven Index. The top performing strategy has been **non – directional** strategies. They have been the best in providing long term risk adjusted returns and protect capital especially in times of market

downturns. These strategies are designed to generate positive returns irrespective of market movements.

Hedge funds have outperformed various asset class benchmarks over the period of 1994 – 2010. Hedge funds have generated alphas higher than the benchmarks. Even in the times when there was extreme volatility and turmoil in the financial markets hedge funds have generated higher positive returns with lower volatility in returns. Hedge funds have the ability to protect capital in times of market instability and minimize drawdowns.

Like all other investments, hedge fund performance also follows a wave like pattern i.e. there will be ups and downs in the returns. In the long term, factors driving the performance may change and so will the strategies implemented by the hedge fund managers. It is imperative to alter the investment strategies as per the movements and changes in the market in order to take advantage of the changing market scenario.

With one of the most perplexing times coming to an end, hedge funds performed commendably. It is very clear that the hedge fund strategy is here to stay. Hedge funds facilitated growth in capital which is much higher than any other asset class benchmarks. They did so with lower volatilities and overcame severe risks. Hence, allocations to hedge funds should be boosted.

7. LIMITATIONS OF THE STUDY

Data: The biggest drawback in conducting this research has been collection of data on the hedge fund asset allocation and their strategies employed. Hedge funds are not obligated to reveal publicly information regarding their performance and their style of investing. Data is not easily and freely available.

Model: Hedge fund returns characteristically display non-linear option-like exposures to standard asset classes and thus traditional linear factor models offer limited help in evaluating the performance of hedge funds (Fung, W., and Hsieh, D., (1997) and (2000), Amin, G., and Kat, H., (2001) and Lo, W. A., (2001)). Hedge funds can use derivatives and they follow dynamic trading strategies, and also because of the explicit sharing of the upside profits (post-fee returns exhibit option-like features even if pre-fee returns do not). In order to try and capture such non-linear dependence: new regressors with non-linear exposure to standard asset classes to proxy dynamic trading strategies in a linear regression should be introduced. Natural candidates for new regressors are buy-and hold or dynamic positions in derivatives (Schneeweis and Spurgin, 2000). An alternative to non-linear regressors are hedge fund Indices.

It has not been possible to run any model for the purpose of this study due to the time constraint and lack of availability of data on funds asset allocation, positions and investment strategies. Also, the various data providers of hedge fund returns and market returns have different time period which makes it difficult to compare returns. There is also the issue of measurement bias which is inherent to the study.

There is a vast scope for further research on this topic. There can be further analysis on the performance attribution of hedge fund returns. Also, the impact of regulations (governing Hedge Funds) on the market stability can be studied further as Hedge Funds have been widely criticised

for the role they played in the financial crisis. Performance of offshore Hedge Funds can also be studied further to get a better understanding. Due to lack of data on offshore hedge funds this section could not be included in this research.

Although, this research has various limitations it has helped throw light on the superior performance of hedge funds as compared to other asset class benchmarks over the period of 1994-2010.

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9. APPENDIX

BENCHMARKS:

The S&P 500 is a free-float capitalization-weighted index published since 1957 of the prices of 500 large-cap common stocks actively traded in the United States. The stocks included in the S&P 500 are those of large publicly held companies that trade on either of the two largest American stock market exchanges: the New York Stock Exchange and the NASDAQ.

The NASDAQ Stock Market, also known as the NASDAQ, is an American stock exchange. It is the second-largest stock exchange by market capitalization in the world, after the New York Stock Exchange. As of January 13, 2011, there are 2,872 listings. The NASDAQ has more trading volume than any other electronic stock exchange in the world.

The Barclays Capital Aggregate Bond Index is a market capitalization-weighted index, previously known as the "Lehman Aggregate Bond Index," is a broad based index used to signify investment grade bonds being traded in United States.

The MSCI World Index is a stock market index of over 1,600 'world' stocks. It is maintained by MSCI Inc., formerly Morgan Stanley Capital International, and is often used as a common benchmark for 'world' or 'global' stock funds. The index includes a collection of stocks of all the developed markets in the world, as defined by MSCI. The index includes securities from 24 countries but excludes stocks from emerging and frontier economies making it less worldwide than the name suggests.

The MSCI EAFE Index is a stock market index that is designed to measure the equity market performance of developed markets outside of the U.S. & Canada. The index includes a selection

of stocks from 21 developed markets and the MSCI EAFE acronym stands for Morgan Stanley Capital International Europe, Australasia, and Far East.

The MSCI Pacific Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in the Pacific region. The MSCI Pacific Index consists of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

Index Construction:

The indexes are rebalanced semi-annually, with member funds chosen according to the following procedure:

- The open/close status of each fund is determined.
- Eligible funds are defined as those funds from the investable universe that meet the definition of eligible funds.
- The weight of each member fund is calculated per their AUM in accordance with the procedure for determining weights specified in "Initial Index Construction". Fund caps may be applied to enhance diversification and limit concentration risk.
- Sub-indexes are maintained for each of the individual investment styles. Collectively, these are known as the Hennessee Hedge Fund Index.